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PROSPECTUS

OF THE

COLLEGE OF AGRICULTURE

1914-15

JANUARY, 1914

PUBLISHED BY THE
UNIVERSITY OF CALIFORNIA
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ADMINISTRATIVE BULLETINS OF THE UNIVERSITY OF CALIFORNIA

1913-14. No. 8

ORGANIZATION OF THE UNIVERSITY

The University of California is an integral part of the public educational system of the State. As such it completes the work begun in the public schools. Through aid from the State and the United States, and by private gifts, it furnishes instruction in literature and in science, and in the professions of engineering, art, law, medicine, dentistry, and pharmacy. In the Colleges of Letters, Social Sciences, Natural Sciences, Commerce, Agriculture, Mechanics, Mining, Civil Engineering, and Chemistry these privileges are offered without charge for tuition, to all residents of California who are qualified for admission. Non-residents of California are charged a tuition fee of ten dollars each half-year. In the Professional Colleges, except that of Law, tuition fees are charged. The instruction in all the colleges is open to all qualified persons, without distinction of sex. The Constitution of the State provides for the perpetuation of the University, with all its departments.

Letters of inquiry concerning the College of Agriculture should be addressed to the *Dean of the College of Agriculture, Berkeley, California.*

For the following circulars of information concerning the several colleges and departments of the University apply to the *Recorder of the Faculties, University of California, Berkeley, Cal.*

1. The Circular of Information, Academic Departments (Colleges of Letters, Sciences, and Engineering, and the first two years of Medicine). Containing general information about the University, its organization, government, faculties, requirements for admission both to graduate and undergraduate status, requirements for degrees and teachers' recommendations, expenses.
2. The Annual Announcement of Courses of Instruction in the Academic Colleges. Published annually in July. Price 10 cents. Sent by mail by the Recorder of the Faculties for 15 cents.
3. The Announcement of the Summer Session in the Academic Colleges, published annually in March. Sent free.

UNIVERSITY OF CALIFORNIA

PROSPECTUS

OF THE

COLLEGE OF AGRICULTURE

1914-15

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY
1914

The first unit of the new Agricultural group of buildings was completed and occupied September, 1912.

AGRICULTURAL STAFF

Benjamin Ide Wheeler, Ph.D., LL.D., President of the University of California.

Thomas Forsyth Hunt, D.Agr., D.Sc., Dean of the College of Agriculture; Professor of Agriculture; Director of the Agricultural Experiment Station.

W. H. Arnold, B.S., Instructor in Chemistry and Botany, Davis.

E. B. Babcock, M.S., Professor of Genetics.

H. S. Baird, B.S., Instructor in Dairy Industry, Davis.

G. Barovetto, Field Assistant in Viticulture, Davis.

J. T. Barrett, Ph.D., Professor of Plant Pathology, Riverside.

H. P. Barrows, B.S., Instructor in Agricultural Education.

W. E. Bates, M.D., Lecturer in Hygiene, Davis.

S. H. Beckett, B.S., Instructor in Irrigation, Davis.

H. L. Belton, Instructor in Shopwork, Davis.

H. E. Billings, M.S., Assistant in Agricultural Chemistry.

F. T. Bioletti, M.S., Professor of Viticulture and Enology.

L. Bonnet, I.A., Instructor in Viticulture.

W. W. Bonns, B.S., Assistant Professor of Pomology, Riverside.

V. C. Bryant, M.S., Assistant in Agricultural Extension.

D. L. Bunnell, Librarian.

J. S. Burd, B.S., Professor of Agricultural Chemistry.

P. S. Burgess, M.S., Instructor in Soil Bacteriology.

R. E. Campbell, B.S., Assistant in Entomology.

A. H. Christiansen, B.S., Assistant in Agricultural Extension.

Lillian D. Clark, Assistant in Agricultural Extension.

W. T. Clarke, B.S., Professor of Agricultural Extension and Superintendent of Farmers' Institutes.

J. E. Coit, Ph.D., Professor of Citriculture.

G. A. Coleman, Instructor in Entomology and Curator of the Agricultural Museum.

I. J. Condit, B.S., Instructor in Citriculture.

B. H. Crocheron, M.S.A., Assistant Professor of Agricultural Extension; State Leader Farm Management Investigations, U. S. Department of Agriculture.

W. V. Cruess, B.S., Assistant Professor of Zymology.

L. M. Davis, B.S., Assistant Professor of Dairy Industry.

J. A. Denny, Foreman in Cereal Work, Davis.

V. F. Dolcini, B.S., Assistant in Animal Husbandry, Davis.

W. H. Dore, B.S., Assistant Chemist in Fertilizer Control.

J. E. Dougherty, B.S., Assistant Professor of Poultry Husbandry, Davis.

H. H. Douglass, B.S., Instructor in Dairy Husbandry, Davis.
B. A. Etcheverry, B.S., Irrigation Expert.
H. S. Fawcett, M.S., Associate Professor of Plant Pathology, Riverside.
F. C. H. Flossfeder, Instructor in Viticulture, Davis.
H. B. Frost, M.S., Assistant in the Citrus Experiment Station and Instructor in the Graduate School of Tropical Agriculture, Riverside.
C. R. George, B.S., Instructor in Animal Husbandry, Davis.
W. F. Gericke, B.S., Instructor in Soil Chemistry.
J. W. Gilmore, M.S.A., Professor of Agronomy.
C. F. Grauel, Orchard Foreman, Davis.
G. P. Gray, M.S., Instructor in Insecticides and Chemist in Insecticide Laboratory.
J. W. Gregg, B.S., Professor of Landscape Gardening and Floriculture.
J. E. Guernsey, M.S., Assistant in Soil Technology.
H. J. Guise, Poultry Foreman, Davis.
H. M. Hall, Ph.D., Assistant Botanist.
C. M. Haring, D.V.M., Professor of Veterinary Science.
F. M. Hayes, D.V.M., Assistant Professor of Veterinary Science.
G. W. Hendry, B.S., Assistant in Agronomy.
A. H. Hendrickson, B.S., Assistant in Pomology.
W. B. Herms, M.A., Assistant Professor of Parasitology.
P. L. Hibbard, B.S., Chemist in Fertilizer Control.
E. W. Hilgard, Ph.D., LL.D., Professor of Agriculture, Emeritus.
Cora J. Hill, Assistant in Dairy Testing.
F. E. Hill, Foreman, Forestry Station, Santa Monica.
D. R. Hoagland, M.S., Assistant Professor of Agricultural Chemistry.
W. T. Horne, B.Sc., Assistant Professor of Plant Pathology.
W. G. Hummel, M.S., Assistant Professor of Agricultural Education.
Thomas Francis Hunt, B.S., Assistant Superintendent Farmers' Institutes.
R. C. Ingrim, Instructor in Shop Work, Davis.
O. W. Israelsen, B.S., Assistant in Irrigation in co-operation with the Office of Experiment Stations, Davis.
J. Jacobsen, Foreman of Repairs, Davis.
M. E. Jaffa, M.S., Professor of Nutrition.
Adele S. Jaffa, M.D., Lecturer in Dietetics.
Katherine Jones, B.S., Assistant in Landscape Gardening.
T. R. Kelley, A.B., Instructor in English and History, Davis.
P. B. Kennedy, Ph.D., Assistant Professor of Agronomy.
O. J. Kern, Assistant Professor of Agricultural Education.
Jas. Koeber, B.S., Instructor in Farm Mechanics.
E. J. Lea, M.S., Assistant Professor Nutrition.
C. B. Lipman, Ph.D., Professor of Soil Chemistry and Bacteriology.
W. E. Lloyd, B.S., Assistant in Poultry Husbandry, Davis.
R. H. Loughridge, Ph.D., Professor of Agricultural Chemistry, Emeritus.

Anna M. Lute, A.B., Seed Tester, U. S. Department of Agriculture (in co-operation).
B. A. Madson, B.S.A., Assistant Professor of Agronomy.
L. K. Marshall, Assistant in Agronomy, Fresno.
W. C. Matthews, A.B., Instructor in Scientific Illustration.
Margaret Mayberry, Librarian, Davis.
C. H. McCharles, M.S., Assistant Professor of Nutrition.
A. McDonald, Stockman, Davis.
Elwood Mead, D.Eng., Professor of Rural Institutions.
W. M. Mertz, Assistant in Pomology, Riverside.
M. R. Miller, B.S., Assistant Chemist in Insecticide Control.
C. S. Milliken, Field Agent in the Frost Damage Survey.
J. F. Mitchell, D.V.M., Instructor in Veterinary Science.
J. N. Moore, Foreman, Forestry Station, Chico.
D. N. Morgan, B.S., Assistant to the Director; Secretary of the College of Agriculture.
Earl Morris, Field Assistant in Santa Clara County.
Walter Mulford, B.S.A., F.E., Professor of Forestry.
J. W. Nelson, B.S., Assistant Professor of Soil Technology.
L. J. Nickels, B.S., Instructor in Insect Industries, Davis.
W. F. Oglesby, A.B., Assistant in Viticulture.
W. E. Packard, M.S., Experimental Agronomist, in charge of Imperial Valley Station, El Centro.
W. G. Perrine, Superintendent of Greenhouses and Gardens.
F. L. Peterson, B.S., Assistant Professor of Farm Mechanics.
B. B. Pratt, B.S., Assistant Professor of Pomology.
H. J. Quayle, M.S., Assistant Professor of Entomology.
C. L. Roadhouse, D.V.M., Assistant Professor of Veterinary Science.
J. T. Rogers, Farm Foreman, Davis.
S. S. Rogers, B.S., Instructor in Plant Pathology, Davis.
W. A. Setchell, Ph.D., Botanist.
L. T. Sharp, B.S., Assistant Professor of Soil Chemistry and Bacteriology.
C. F. Shaw, B.S., Professor of Soil Technology.
Alfred Smith, A.M., Instructor in Soil Technology.
C. O. Smith, M.S., Instructor in Plant Pathology, Whittier.
Elizabeth H. Smith, M.S., Plant Pathologist.
R. E. Smith, B.S,, Professor of Plant Pathology.
R. T. Stevens, B.S., Assistant Professor of Landscape Gardening.
Guy R. Stewart, B.S., Assistant Professor of Agricultural Chemistry.
Mattie E. Stover, B.S., Instructor in Nutrition.
A. V. Stubenrauch, M.S., Professor of Pomology.
Thos. Tavernetti, B.S., Assistant to the Dean of the University Farm School.
R. H. Taylor, B.S., Instructor in Pomology.
W. J. Taylor, D.V.M., Assistant Professor of Veterinary Science, El Centro.

E. E. THOMAS, B.S., Assistant Chemist, Whittier.
J. I. THOMPSON, B.S., Assistant Professor of Animal Husbandry.
C. M. TITUS, M.A., Instructor in Mathematics, Davis.
G. H. TRUE, B.S., Professor of Animal Husbandry.
A. R. TYLOR, B.S., Assistant Plant Pathologist, Whittier.
E. C. VAN DYKE, B.S., M.D., Instructor in Entomology.
H. E. VAN NORMAN, B.S., Dean of the University Farm School, Davis; Vice-Director of the Agricultural Experiment Station; Professor of Dairy Management.
W. H. VOLCK, Field Assistant in Monterey County.
E. C. VOORHIES, B.S., Assistant in Animal Husbandry, Davis.
A. E. WAY, Field Assistant in Viticulture, Fresno.
H. J. WEBBER, Ph.D., Director Citrus Experiment Station, Riverside; Dean of the Graduate School of Tropical Agriculture; Professor of Plant Breeding.
E. J. WICKSON, M.A., Professor of Horticulture.
C. J. WIGHT, B.S., Instructor in Botany, Davis.
F. W. WOLL, Ph.D., Professor of Animal Nutrition.
C. W. WOODWORTH, M.S., Professor of Entomology.
H. D. YOUNG, B.S., Assistant in Agricultural Chemistry, Whittier.
C. J. ZINN, Assistant in Soil Technology.

ACTIVITIES

The College of Agriculture has three phases: research, education, and public welfare.

It meets these responsibilities through more or less definitely organized activities as follows:

1. *University instruction* to students who are candidates for the Degree of Bachelor of Science in the College of Agriculture. The largest possible freedom of election is permitted during the junior and senior years. For admission see page 25.
2. *University Farm School instruction* to students who have reached the age of 18 years. Applicants under 18 years of age may be admitted if they are graduates of a high school of recognized standing. Other applicants are required to pass entrance examinations in English composition and arithmetic.
3. *Short courses for practical farmers.* These are given at the University Farm during October and November. They are open to any person over 18 years of age without examination.
4. *University extension in agriculture,* including *Farmers' Institutes.* Applications for farmers' institutes should be addressed to the Superintendent of University Extension in Agriculture, University of California, Berkeley.
5. *Research.* Certain funds received from the Federal government can be used only for experimental work. Results of these investigations are published in bulletins and circulars which are sent free upon request.
6. *Graduate work.* Opportunities of an unusual character are offered by reason of the larger number of research laboratories. A special department of graduate work in tropical agriculture has been organized. A complete announcement of the Graduate School will be sent free to university and college graduates.

UNIVERSITY INSTRUCTION

Inspection drill with 1300 students in line. Agriculture Hall in the rear.

The student who is a candidate for the Degree of Bachelor of Science in the College of Agriculture is required to take a given amount of languages, mathematics, history, economics, sciences and technical studies before graduation. Certain of these subjects must be completed before the close of the sophomore year, as stated on page 27. Before entering upon his junior year, each student is given summer work for six weeks, carried on as far as possible, as in actual practice, at Davis, Fresno, Riverside or elsewhere, depending upon the subject in which the student is chiefly interested. Opportunity for instruction for at least one semester at the University Farm, Davis, or elsewhere, is provided.

It is the aim first to educate students who spend four years or more in the College of Agriculture so as to make them a vital force in the progress of the respective communities where they live; second, to create leaders in the dissemination of agricultural knowledge and competent investigators. The university courses in Agriculture give both the mental training that is indispensable to success and the scientific and technical training requisite for efficient work in practical farming, agricultural education or research.

FARM SCHOOL INSTRUCTION

The University Farm School offers a three-year course in Agriculture so arranged that the student may specialize in either animal husbandry or horticulture. This course is planned to meet the needs of students who have reached the age of 18 without the requirements for admission to the four-year courses offered by the University, or who may not wish to take the time to acquire so thorough training in languages, mathematics and underlying sciences as these courses necessitate. The work is so arranged that graduates of high schools may complete the course in two years. Every effort is made to meet the needs of high school graduates who desire two years of technical training in Agriculture. It is intended to give them a thorough grasp on the principles which underlie the scientific and economic management of soils, crops, and animals. For further details see pages 79–86.

The University Farm School has two dormitories and a dining hall for the accommodation of students.

THE SHORT COURSES

Practice in belt lacing is one of the many branches of short course work.

An Act of the Legislature of 1905 provided for the purchase of a farm for the University of California, to be known as the University Farm and to be used by the College of Agriculture for purposes of experimentation and instruction in agriculture. In addition to other details, the Act provided that "short courses of instruction shall also be arranged for in each of the leading branches of agricultural industry, so regulated as to provide for popular attendance and general instruction in agricultural practice."

Conforming to this Act, and with funds appropriated by each succeeding Legislature, short courses have been given annually, beginning in the fall of 1908. The attendance and the expressions of hearty appreciation of the courses have been gratifying to the University and have indicated that the plans adopted meet with general public approval.

Lessons and practice in pruning are given at the University Farm, Davis.

UNIVERSITY EXTENSION IN AGRICULTURE

The College of Agriculture of the University of California believes that it owes a duty to the state at large that can be fully accomplished only when it is engaged to the fullest extent in public service. The following are some of the methods of rendering this service adopted by the College of Agriculture of the University of California to thus serve the people of the State.

Farmers' Institutes.—Meetings of farmers and those interested in farming work are addressed by Experiment Station workers and by men and women engaged in successful agricultural practice. At these meetings problems of local importance are discussed and lines of desirable work described and demonstrated to the end that the successful practice of trained men and women may become the common practice of the locality. It is the aim to make the work done at these meetings of immediate value to the community and the methods of presentation may therefore vary in different regions to meet local needs. The Farmers' Institute is distinctly a people's forum. These meetings are placed where conditions seem to indicate that the need exists.

Agricultural Trains.—The University of California recognizes that the need of bringing to the great mass of farmers certain facts or methods of work which are of vital importance to their business should receive immediate and general attention. To bring these facts to those most interested in an impressive and tangible form there are sent out what are known as Agricultural Trains. These fully equipped trains of cars are furnished by the different transportation companies and carry conveniently arranged exhibits of material and appliances to

Attentive crowds gather about the Agricultural Trains illustrate the line of work or practice to which the College especially wishes to call attention.

Movable Schools of Agriculture.—It is fully recognized that while the Farmers' Institutes and the Agricultural Train are of immense value in improving working conditions upon our farms they cannot in the very nature of things go very deeply into the matter of the basic principles underlying a successful agriculture. To meet this condition we have established as a part of our activities what are known as Movable Schools of Agriculture. To carry on this work we establish a regular short course school for enrolling students in localities desiring such an activity. These schools are planned to be in operation for two weeks and usually undertake to cover in an intensive way two or three related lines of agricultural practice. The instruction in these Movable Schools covers lecture, text-book, laboratory and field demonstration work. These schools will be established when and where the conditions seem to warrant such action.

Eagerness for increased knowledge shown by old and young inspires the University to greater effort.

High School Lectures.—The College of Agriculture recognizes that its public service must in very large measure meet the needs of those now engaged in agricultural work. It further recognizes the fact that the farming work of the future, to be successful, must be prosecuted by those who have been adequately trained. To assist in arousing the attention of those who will work our fields in the future and to present to our coming farmers and those who are interested in sound educational work the facts that the College deems fundamental to success, there have been established lecture courses to be given in various high schools of the state. The lectures are given by members of the College staff and represent a distinct and valuable means of increasing interest in farm activities.

In the citrus belt the acquiring of increased agricultural knowledge goes hand in hand with prosperity.

THE FARM ADVISOR

A comparatively new work in agricultural colleges is that of the farm advisors, which have already been established in 180 counties of the United States. California has recently initiated the work, which is administered through a state leader employed through the Division of Agricultural Extension and the Office of Farm Management, U. S. Department of Agriculture, which co-operates in the work of all farm advisors.

The farm advisor is employed to study the agriculture of one county in which he is placed permanently. His work has four phases: (1) Investigation of the best methods of farm management of his county, (2) Demonstration of these methods on the farms of those desirous to co-operate, (3) Advice to farmers who ask for it, (4) Assistance to all organizations that further agricultural progress and prosperity as farmers' clubs, schools, churches, boys' clubs, etc. The farm advisor is a field man of the agricultural forces of the state and nation, thus bringing to the individual farmer the assistance of both.

AGRICULTURE CLUBS IN SCHOOLS

The students of the College of Agriculture inaugurated a movement for the establishment of agricultural clubs throughout the State which should be branches of the students' club at Berkeley. In this work the Divisions of Agricultural Extension and Agricultural Education are co-operating. Fifty men students of the College are actively at work creating sentiment for the formation of boys' clubs over the State. Thirty women students are engaged in similar work for girls in certain high schools.

The idea of the agricultural clubs is to create a greater interest in practical agriculture among the young people of California. This is accomplished by banding them together for mutual work through the medium of local clubs and the agricultural contests which these carry on. Every member of a club so established is expected and required to engage in one agricultural contest each year and to keep a record of his work and results, so that it may be of advantage and assistance to the agriculture of the community.

The students at Berkeley not only send out model constitutions, suggestions for contests, plans for meetings and methods of work, but also personally visit the schools where clubs are to be formed when so requested by the local authorities.

Correspondence Courses and Reading Courses.—To meet the special needs of individuals, as these needs may perhaps not be met by the efforts previously described, there have been established definite lines of instruction through correspondence and reading courses. In these courses the enrolling student is given instruction along specific lines both by carefully prepared lessons and questions thereon and by well considered lines of suggested reading.

Personal Letters.—The College of Agriculture feels that the best attention should be given to personal and individual inquiries and that its duty is to see that the questions that may be raised receive adequate reply. This branch of our work means the handling of many thousands of letters each year and will receive in the future as in the past the earnest attention of those whose duty it may be to handle the matter at issue.

Personal Visitation.—The intending farmer and the man already in the business may occasionally be confronted by some problem which demands for an adequate answer the investigation and study that only an expert can give it. To meet this condition the College is prepared, with due regard to other demands, to send men out for the specific purpose of studying the problem at first hand and to advise those directly interested as to the proper methods of procedure.

The whole object of the work in University Extension in Agriculture is to render work on the farm and life in the farm home more attractive, more interesting and more wholesome in every sense of the word. In the last analysis the success of the commonwealth depends upon the success of its farms, and the College of Agriculture of the University of California holds itself ever ready to do its duty in ministering to this success.

RESEARCH

Science has proven to be an indispensable factor in furthering the progress of agriculture. The achievements in agricultural science, however, have done scarcely more than to suggest the possibilities of future development. The Station looks back over an honorable record of thirty-seven years under the direction of Hilgard and Wickson, during which period a fundamental groundwork has been laid that it is believed will be enduring. Particular features of this basic work of the Station include the demonstration of the distinctive characteristics of the soil of semi-arid climates as manifested in California, including unique discoveries of the operation of soil organisms; demonstration of the value and utilization of alkali lands through proper reclamation methods; also demonstrations bearing on the economical use of water and the development of better methods of the application of water in orchard and vineyard practice. In the field crops there has been demonstration of improved methods of culture, together with the production of improved varieties or select strains of cereals, which are a basis for building up vastly increased production.

Efforts are being made to develop a remedy for walnut blight, with promise of success.

It is difficult to express properly the wide influence that has been exerted by the experts of the College of Agriculture on horticultural practice not only in this state, but elsewhere in the United States, and also in the most remote countries of the world where the California form of fruit tree is now recognized as embodying peculiarly desirable characteristics. The work has also been unique in having a station devoted exclusively to the investigation of the culture of citrus fruits and in the fact that in California has been found the only College of Agriculture in America having a distinct department for the study of the grape and its products.

Among the many definite acts of service to the producers of the State, foremost in the field of plant disease control should be mentioned the control of the asparagus rust, the discovery of the cause and control of the Brown Rot of citrus fruit,—a disease new to science and horticulture before its appearance in southern California about seven years ago. The maintenance of special laboratories and fields for the study of plant diseases has been a constant defense against these serious sources of loss to plant growers.

Certain methods of control of injurious insects have been developed by the Station, which have been adopted generally not only throughout California, but also in other states and, in some instances, even in other countries.

California was the first state to provide *effective* legislation for the control of the chemical composition of insecticides, which was based upon the work of the California station, and is now in wide and beneficent operation.

Metabolism experiments with nuts and fruits as human food have clearly demonstrated the great value of these elements of human diet. Execution of state laws controlling the purity of the food of the people has been made possible through co-operation between this Experiment Station and the State Board of Health. Based upon the work of the station, the Legislature has also provided for the control of hog cholera by the manufacture and distribution of immunizing serum to all parts of the state.

CENTERS OF THE COLLEGE OF AGRICULTURE IN CALIFORNIA

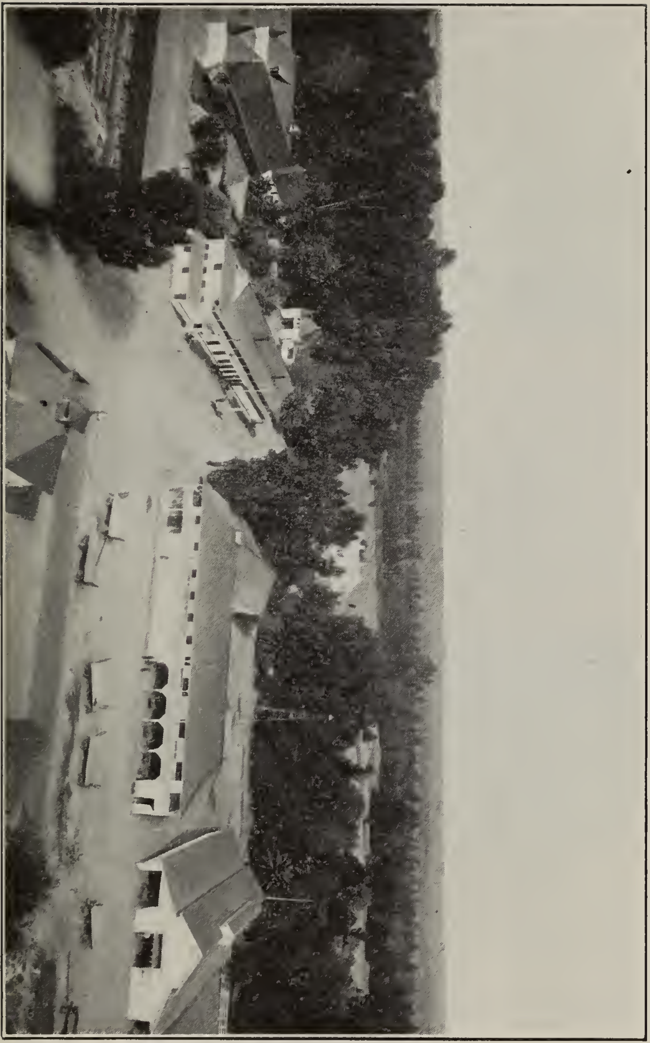
To further the aims of the College of Agriculture there have been established certain important centers of activity in various portions of the State where the work of the College of Agriculture may be developed, and from which it may ramify. These centers are at present as follows:

COLLEGE OF AGRICULTURE AND EXPERIMENT STATION AT BERKELEY

The headquarters for the activities of the College of Agriculture and Experiment Station are located on the Campus of the University of California, and in addition to a modern white granite structure (see frontispiece) to house the horticultural, entomological, plant pathological and irrigation departments and administrative offices includes Budd Hall, in which the cereal, agricultural chemical, veterinary and soils work are taken care of, and the Fertilizer Control Building, in which the State Fertilizer Control Laboratory and the State Food and Drug laboratories are housed. The laboratories in all of these structures are being enlarged and refitted for the use of as large a number of students as possible and to take care of the large increase in enrollment which follows from year to year.

UNIVERSITY FARM

This farm, which was purchased in accordance with a California statute of 1905, comprises 779 acres of fine alluvial soil and is situated at Davis, Yolo County. The farm is provided with adequate buildings for instruction in practical agriculture and horticulture, including a commercial creamery, stock papavilion, horticultural building, dairy barn, horse barn, cereal building, mechanical shops, poultry building, two dormitories and one dining hall. Full provision is made for instruction to farm school students and to short course students during the limited portions of the year, as stated elsewhere in this Prospectus.



The Kearney Ranch—"We have with all this variety of equipment and location the opportunity to develop in California the completest and richest system of agricultural education and research that the world has yet seen."—President Wheeler.

KEARNEY PARK

The production of olives is one of the profitable industries of the Kearney Estate.

The Kearney Estate, which was bequeathed to the University of California by M. Theodore Kearney, comprises 5400 acres of land on which are situated extensive vineyards, orchards, and alfalfa ranches. A small portion of this ranch is used for experimental purposes, otherwise it is managed wholly as a commercial enterprise. Students specializing in pomology may do their required summer work there. It is a part of the plan of the Board of Regents to make this estate contribute to the most extensive and varied instruction in horticulture that has ever been attempted.

IMPERIAL EXPERIMENT STATION

The Experiment Station at El Centro, Imperial County, comprises about 40 acres of land on which experiments relating to the growing of vines, cotton, and cereals, as well as other crops which may be suited to the Imperial Valley, are conducted. The Experiment Station is equipped with a laboratory, office and library, and out-buildings for farm stock and farm machinery.

PLANT PATHOLOGICAL LABORATORY

This sub-station at Whittier, Los Angeles County, was provided for by the Legislature of 1905, and includes a large and well equipped laboratory building, in which research work is carried on which bears on the nature and control of plant diseases affecting fruits and vegetables. Entomological, plant pathological and chemical laboratories are included.

The successful combatting of several serious plant diseases has resulted from investigations carried on at the Whittier Laboratory.

CITRUS EXPERIMENT STATION

The Citrus Experiment Station at Riverside serves as a center for the study of the citrus industry and other problems arising wherever agriculture is conducted by irrigation. This will also be the center for graduate instruction in tropical agriculture and for summer instruction for University students who are specializing in citrus culture.

Laboratory of the Citrus Experiment Station, Riverside. Oranges and lemons in foreground a part of eight acre fertilizer experiment begun in 1907.

FORESTRY STATIONS

The two Forestry Stations, at Santa Monica and Chico respectively, on which forestry problems are studied by the University, were transferred to the University by the Legislature in 1893. Problems relating to forest growth, species of trees best available for foresting otherwise unused land, and other problems relating to forestry are here worked out.

The size of the wheat plant and the yield and quality of grain are modified by soil and climate.

CO-OPERATIVE EXPERIMENTS

In order to reach as large a portion of the State as possible in the experimental work of the College of Agriculture, the efforts of the latter are not confined to the numerous sub-stations, but also include experiments in co-operation with agriculturists and horticulturists in this State looking toward the solution of problems for more limited areas of California. Some of these are carried on by several divisions within the Department of Agriculture, and include short term experiments which are frequently of great practical value.

1. Library.

2. Mechanical Engineering. 3. California and Boalt Halls.

4. Hearst Memorial Mining Building. 5. South Hall.

6. North Hall.

The University campus has long been famous for its natural beauty.

UNIVERSITY COURSE IN THE COLLEGE OF AGRICULTURE

ADMISSION

The various methods of admission are the same as for any other college of the University of California, viz.: by examination; by recommendation from accredited schools in California; on normal school and teachers' diplomas; on credentials from schools outside California. For information concerning any of these methods consult the *Circular of Information of the Academic Colleges.*[1]

The minimum requirements for admission, in terms of high school work, are: English, 2 years, 6 units; foreign language, 2 years, 6 units; foreign language, intermediate mathematics, advanced mathematics, third-year or fourth-year science,[2] in any combination, 2 years, 6 units; U. S. history and civics, 1 year, 3 units; mathematics, 2 years, 6 units; natural science, 2 years, 6 units; electives, 12 units; total, 45 units.

The required fundamental studies must be completed before the Junior Certificate will be granted. This is the work of the preparatory school and the lower division in the University. Upon completion of this required work the student receives the Junior Certificate, which entitles him to elect the remainder of his undergraduate courses, providing he arrange his studies so as to show an amount of properly correlated, advanced work sufficient to satisfy the general requirement for graduation from the College of Agriculture.

Preparatory students who intend to enter the College of Agriculture should familiarize themselves with the requirements for the Junior Certificate in that College, since the work of an accredited high school is really supplementary to that of the Lower Division. For example, four years of English in an accredited high school completes the total requirement in English for the Junior Certificate. In the same way the student may complete the Junior Certificate requirements in mathematics, foreign languages, or history. In other words, a student who presents excess matriculation credit of approved grade *in any prescribed subject* thereby reduces the amount of work required of him in that subject in the University and earns the privilege of substituting *elective courses* in making up the sixty-four units of work required for the Junior Certificate.

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[1] Sent free upon application to Recorder of the Faculties, University of California, Berkeley.

[2] Physics and Chemistry strongly advised.

This arrangement does not lessen the amount of work to be done, but it does give an opportunity to take more courses in agriculture than would otherwise be possible in the Lower Division. It makes possible broader preparation in natural sciences, foreign languages, or economics.

SUMMARY OF REQUIREMENTS FOR THE JUNIOR CERTIFICATE INCLUDING REQUIREMENTS FOR MATRICULATION[2]

(The requirements are stated in "units"; in the University a unit signifies one hour per week of recitation or lecture with preparation therefor during one half-year. A course of study taken in the preparatory school for one year at five periods per week is valued at three units. The number of units indicated below for each subject under the head of Junior Certificate represents the normal amount of work done in the lower division of the University.)

Subject	Matriculation	Junior Certificate
English	6	12
Greek, Latin, German, French, Spanish or Italian	6	18
Foreign Language, Intermediate Mathematics, Advanced Mathematics, third-year or fourth-year Science, in any combination	6	......
History of Economics	3	9
Mathematics	6	12
Natural Science	6	18
Military Science, Physical Culture, Hygiene	......	9
Agriculture	......	17
Elective	12	14
Total	45	109

The Junior Certificate is required of all regular students in the College of Agriculture. The certificate must be obtained in advance of the last two years of residence. Until the certificate has been obtained the student is classed in the Lower Division.

WORK OF THE LOWER DIVISION

General Requirements

(1) That portion of the 18 units of Natural Science required for the Junior Certificate, which is done at the University, shall be chosen from the following fundamental subjects:

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[2] For the full description of matriculation subjects and other details concerning University instruction see Circular of Information concerning the Academic Colleges. Sent free upon request by the Recorder of the Faculties, University of California, Berkeley.

General Botany, General Chemistry, General Zoology, General Physics, Elementary Bacteriology, Introductory Physiology.

(2) The 17 units of Agriculture required for the Junior Certificate shall consist of the following subjects:

Agricultural Chemistry;
Soil Technology;
Plant Propagation;
Principles of Plant and Animal Breeding.

(3) Courses of instruction should be chosen primarily with reference to the major subjects. Suggested four-year courses will be furnished by the instructors in charge of the major subjects. Beginning with his sophomore year, the student will indicate on his study-list card, each half-year, the number (as given below) of the major subject or subjects which he proposes to study. For a clear understanding of what studies the major subjects include the student should consult the Upper Division courses of study outlined for the various major subjects on pages 00 to 00. The major subjects in Agriculture are as follows:

I. Agricultural Education;
II. Agronomy;
III. Pomology;
IV. Citriculture;
V. Landscape Gardening and Floriculture;
VI. Viticulture and Enology;
VII. Soils and Fertilizers;
VIII. Nutrition;
IX. Agricultural Chemistry;
X. Animal Husbandry and Veterinary Science;
XI. Poultry Husbandry;
XII. Dairy Industry;
XIII. Entomology;
XIV. Parasitology;
XV. Plant Pathology;
XVI. Irrigation.

While not essential for the Junior Certificate, the following work is required as prerequisite to the major subjects as listed above:

Economic Botany and Principles of Economics for I, II, III, and IV.

Economic Botany and Principles of Economics; Surveying (C. E. 1A-1B, 1C-1D); Drawing A-B or matriculation subject 16; Drawing C-D or matriculation subject 17 for V.

Economic Botany for VI*a*.

Bacteriology and Gravimetric and Volumetric Analysis for VII.

Gravimetric and Volumetric Analysis for VI*b*, VIII, and IX.

General Zoology, Introductory Physiology and Elementary Bacteriology for X.

General Zoology and Introductory Physiology for XI.

Elementary Bacteriology and Gravimetric and Volumetric Analysis for XII.

Entomology 6 for XIII.

General Zoology, Elementary Bacteriology, Epidemiology and Parasitology 1 for XIV.

General Cryptogamic Botany (first half-year) for XV.

General Physics (2A-2B), Elements of Analysis, and Surveying for XVI.

(4) All students before graduation must complete the following:

Botany 2 and 3, 2 semesters;
Zoology 1, 1 semester;
Chemistry 1A-1B, 2 semesters;
Pathology 1 (Bacteriology), 1 semester;
Geology 1A or Physical Geography 1A, 1 semester;
[3]Physics 2A, 1 semester;
[3]Drawing C–D (Instrumental Drawing), 2 semesters;
[3]Mathematics C (Trigonometry), 1 semester.

GENERAL GUIDE FOR STUDENTS IN THE LOWER DIVISION

NOTE.—*For detailed descriptions of the various courses referred to by number in this prospectus consult the Announcement of Courses of the University, as listed on second page of cover.*

FRESHMAN

First Half-year

Botany 2 (General Botany)	3
Chemistry 1A (Inorganic Chemistry and Qualitative Analysis)	5
[4]Foreign Language	3 or 5
[5]English, [6]Mathematics or [7]History	3 or 2
Military Science, Physical Culture, Hygiene	4½
	18½ or 19½

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[3] Not required of students having matriculation credit in these subjects.

[4] Required of all who enter with less than 18 units credit in foreign languages. See Upper Division requirements in Major Subjects.

[5] Required of all who enter with less than 12 units credit in English.

Second Half-year

Botany 3 (General Botany)	3
Chemistry 1B (Inorganic Chemistry and Qualitative Analysis)	5
[4]Foreign Language	3 or 5
Bacteriology (Pathology 1)	3
Military Science, Physical Culture	2
	16 or 18

SOPHOMORE

First Half-year

Agricultural Chemistry 1	5
Geology 1A, or Physical Geography 1A	3
Zoology 1A (General Zoology)	4
[8]Drawing C	1
[9]Elective	3
[10]Physics 2A or Economics 1A	2 or 3
Military	½
	18½ or 19½

Second Half-year

Soil Technology 1	4
Plant Propagation (Horticulture 1)	4
Principles of Breeding (Genetics 1)	4
[8]Drawing D[12]	1
[11]Electives	5
Military	1
	19

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[4] Required of all who enter with less than 18 units credit in foreign languages. See Upper Division requirements in Major Subjects.

[5] Required of all who enter with less than 12 units credit in English.

[6] Required of all who enter with less than 12 units of Mathematics; Course C required of all who enter without credit in Trigonometry or who do not take Mathematics 1A-1B.

[7] Required of all who enter with less than 9 units credit in History. Principles of Economics prerequisite to major subjects I, II, III, and IV.

[8] Required of all without credit in matriculation subject 17.

[9] Chemistry 5A or 6A prerequisite to certain Upper Division courses in Soils, Nutrition, etc. See also prerequisites to major subjects V, X, XI, XIII, XIV, and XVI. For major in Irrigation or Landscape Gardening students should elect C. E. 1A-1B, 1C-1D, and C. E. 3A (Summer Session).

[10] Required of all without credit in matriculation subject 11.

[11] Students should make certain that they have met all Junior Certificate requirements.

[12] Or Drawing C–D may be taken in one semester.

SUMMER PRACTICE

Each student is required to take summer practice connected with his proposed major subject before beginning upon his junior year. The work is carried on as far as possible just as in actual practice. It is intended to give the student an insight into his future occupation. In 1914 the courses begin on May 14; credit, 6 units. Expenses vary with the subject selected. At Davis, the expenses for room, board and incidentals need not exceed $50 for a period of six weeks. In some subjects, railway fare and other incidents of travel may bring the expense up to $150.

Students must select the particular subject which they will take at the beginning of the second half of the sophomore year, place the same upon their study-list and have it approved by the professor in charge of their major subject. Women may offer in lieu of the summer practice, six units of approved work in the Summer Session.

WORK OF THE UPPER DIVISION

Regular students will have chosen the major subject or subjects in which they wish to specialize during the sophomore year. The Upper Division work must be extended over a period of two years of residence. Not more than 16 units may be taken during any one-half year when in residence at Berkeley except by special permission upon formal petition to the Department of Agriculture. Among the sixty units of work normally taken there must be thirty-six units in *major courses* (courses numbered 100 or higher), as follows:

Major subject	10
Thesis in major subject	4
Courses correlated with major subject	10
Agriculture (any sub-departments)	12

The work of the Upper Division shall be carried on under the direction of the head of the division in which the major subject is taken and all junior and senior study-lists shall be approved by him before presentation for signature by the dean.

Thesis work will be arranged with an instructor in the major subject. The student will submit his plan of thesis work to the dean of the college at the beginning of his senior year and upon approval by the dean shall file his thesis card with the Secretary. For further procedure follow rules 1–7, inclusive, as stated in the Circular of Information, p. 100. One hundred and thirty units are required for graduation.

UPPER DIVISION COURSES OF STUDY ARRANGED BY MAJOR SUBJECTS

Explanatory Note.—The introductory remarks, preceding each Upper Division course of study, deal mainly with the work of instruction in the respective subjects. In some cases, however, reference is made to investigational work, which is to some extent related to advanced instruction. *Regarding electives,* it is generally recommended that in each half-year the student elect at least 2 or 3 units of work in the humanities, e.g., English literature, education, history, sociology. It should be understood that these Upper Division study-lists are not prescribed; they have been prepared by the divisions respectively concerned and are offered as guides for students wishing to specialize in the various subjects.

AGRICULTURAL EDUCATION

The division of agricultural education at present offers instruction in eight courses, which, accompanying instruction in technical agriculture, are intended to prepare students for efficient agricultural teaching in secondary schools of both normal and high school rank and for supervision and teaching of agricultural work in elementary schools.

These courses include study of the materials and methods adapted to agricultural instruction in secondary and elementary schools, accompanied by carefully supervised practice work; a special course dealing with the place and function of the high school farm and garden, together with practice in planning and executing problems and demonstrations out of doors; study of special methods to be employed in the teaching of general science and first-year agriculture.

In addition, special summer courses are given each year to suit the needs of teachers already in service but desiring professional improvement.

It is planned to add, as soon as possible, other desirable courses, such as the history of industrial education, with particular reference to agriculture; the making of community social surveys and the carrying on of local community or extension work; and a general course in agricultural pedagogy, adapted especially to the needs of students preparing to teach agriculture in special agricultural schools or in college.

TEACHER'S CERTIFICATE

For the recommendation of the division for either a special certificate or the regular state certificate the following requirements must be met:

I. That the applicant, if a graduate of the University of California in 1914 or thereafter, shall have taken his major in Agricultural Education.

II. That the applicant shall have had the following work or the equivalent:

(*a*) Agricultural Education 101, 102, 104.

(*b*) At least one course in Soils, Economic Botany, Pomology, Agronomy, Landscape Gardening, Plant Pathology, Economic Entomology, Farm Management, Live Stock, Dairying, Poultry, Veterinary Science, Farm Machinery, Irrigation.

COURSE OF STUDY

Summer practice in General Agriculture must precede Upper Division work for those whose major is in this subject.

Prerequisite to major subject: Botany 116 and Economics 1.

Foreign language: A reading knowledge of either French or German required; German advised.

Recommended electives: Agricultural Education 5 and 105. At least one course in irrigation, field crops, nutrition, and landscape gardening. Physical Geography 2, Citriculture 101, Soil Technology 101, and Plant Pathology 121.

EXAMPLE OF PROGRAMME

Junior

First Half-year

Botany 116	3
Irrigation 103	2
Pomology 101	3
Entomology 2	2
Elective	6
	16

Second Half-year
At University Farm, Davis

Animal Husbandry 105	4
Dairy Industry 127	3
Poultry Industry 101	3
Veterinary Science 111	4
Farm Machinery 2	2
Irrigation 104	3
	19

Senior

First Half-year

Education Group I	3
Agricultural Education 102	3
Agronomy 118	3
Thesis	2
Elective	5
	16

Second Half-year

Education Group II	3
Agricultural Education 104	3
Agricultural Education 101	3
Thesis	2
Elective	5
	16

AGRONOMY

The courses outlined by the Division of Agronomy are intended to offer to those taking the major portion of their work in this division thorough and comprehensive instruction in field crops, crop production, and farm management. The subject matter of these courses comprises the most recent information and experimental data. While the conditions prevailing in California and the Pacific Slope are given consideration, yet the instruction is not intended to be limited geographically. The courses comprehend the theoretical and technical phases of the subject as well as the practical application of the principles involved.

Students learn to know seeds and their quality by studying them in the laboratory and by making germination tests.

The courses of instruction in this division are co-ordinated with the courses in Animal Husbandry, Dairy Industry, Soil Chemistry, Technology, and Genetics. By this arrangement it is believed that the student will get the most comprehensive knowledge of the three large branches of agricultural science,—the Soil, the Plant, and the Animal. The courses in Farm Management are designed to correlate the information obtained in the other courses and divisions to the end that the student may understand the principles involved in conducting a farm as a profitable business.

In addition to the activities of instruction and investigation in class rooms, laboratories and green house at Berkeley, the Division of Agronomy conducts investigations and demonstrations in soil management and crop production at the University Farm, Davis; at Kearney Park, Fresno; and at Meloland, Imperial County. The division is also working in co-operation with the U. S. Department of Agriculture in crop production enterprises in several other parts of the State. Through the agency of these outside activities the students are given varied opportunities for farm practice and investigations. They also afford advantages to students desiring to pursue graduate work in the many phases of soil management or crop production.

COURSE OF STUDY

Summer practice at the University Farm must precede Upper Division work for those whose major is in this subject.

Prerequisite to major subject: Botany 116 and Economics 1.

Recommended electives: All Lower Division courses in field and forage crops.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Botany 116	3	Agronomy 107	3
Irrigation 103	2	Agronomy 120B	2
Agronomy 120A	3	Genetics 120	3
Botany 105A	3	Plant Pathology 121	2
Entomology 2	2	Soils 101	3
Elective	3	Elective	3
	16		16

Senior

First Half-year

Agronomy 118	3
Agricultural Education 101	3
Veterinary Science 115	3
Thesis	2
Elective	5
	16

Second Half-year

At University Farm, Davis

Agronomy 100	3
Farm Machinery 101	4
Animal Husbandry 101	4
Dairying or Poultry (Elec.)	4
Thesis	2
	17

POMOLOGY

All the orchard trees at the University Farm are budded nursery stock.

The courses in Pomology at Berkeley offer thorough instruction in both the technical and practical aspects of the culture of deciduous fruits, small fruits and nuts. Attention will be given to the classification, comparison, selection and production of these fruits, orchard management, fruit transportation, storage, marketing and fruit utilization. Practice work will be given in the laboratory at Berkeley and at the University substations at Davis and Fresno, and other points where special arrangements can be made.

Students expecting to major in Pomology should consult with the instructor in charge as early as possible in order that proper electives may be selected to meet the requirements of the Upper Division work.

At Davis, instruction is given to farm students similar to that outlined above for University students.

The aim of the division is to thoroughly ground the student in those fundamental principles, which are the foundations of successful orchard practice, and to train him for close observation of the product with which he deals.

COURSE OF STUDY

Summer course preceding Upper Division to be arranged. This course will be Pomology 99.

Prerequisite to major subject: Botany 116 and Economics 1.

Foreign language: A reading knowledge of French or German required; both advised.

Recommended electives: Citriculture 101, Botany 109, Surveying (C. E. 1), Physical Geography 2, Agronomy 118.

EXAMPLE OF PROGRAMME

JUNIOR

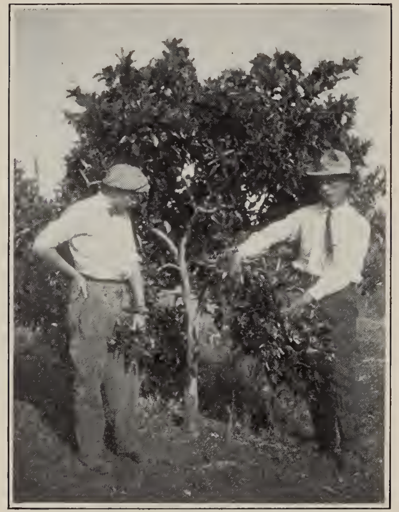
First Half-year		*Second Half-year*	
Pomology 101	4	Pomology 102	4
Botany 105A	3	Pomology 105	1
Plant Pathology 2	3	Plant Pathology 121	2
Botany 116	3	Soils 101	3
Elective	3	Viticulture 116	3
	16	Elective	3
			16

SENIOR

First Half-year		*Second Half-year*	
Pomology 104	3	Thesis	2
Pomology 105	1	Pomology 103	2
Citriculture 102	4	To be arranged	12
Irrigation 103	2		16
Thesis	2		
Elective	4		
	16		

(This work will be given at Davis, Fresno or other places where facilities are available.)

CITRICULTURE AND SEMI-TROPICAL FRUITS



Proper spacing of limbs of young orange trees obviates expensive propping and bolting in later years.

Instruction given in Citriculture at Berkeley includes lectures and laboratory work covering as far as practicable all phases of the citrus industries of the world and of citrus production in California in particular. Knowledge of the fundamental sciences gained in Lower Division work is here applied specifically to the production and marketing of citrus fruits. Practice work, which is adaptable to the laboratory, such as the systematic study of species and varieties, morphology of the fruits and other plant parts, root stocks, budding, etc., will be given at Berkeley. Practice work in land judging, planting, pruning, picking, packing, etc., will be given at the University sub-stations at Riverside, Whittier, Fresno, or in large commercial orchards wherever special arrangements can be made.

Instruction in semi-tropical and tropical fruits, including the date, olive, fig, avocado, guava, loquat, mango and others, will be given by lectures, laboratory and field practice in a manner similar to that outlined above for citriculture.

The aim of the division is to equip its graduates with the knowledge and practice required to successfully prepare, plant and operate citrus orchards and plantations of semi-tropical fruits on a commercial scale. Graduates entering the industry will continue to receive all possible assistance in solving any special problems which may arise. Those intending to teach in high schools or colleges or enter experiment station work are advised to pursue one or more years of graduate study.

Student Practice.—The use of the marked tent has done much toward eliminating guesswork in the practice of fumigating citrus trees for the control of scale insects.

COURSE OF STUDY

Summer course preceding major subject to be Citriculture 99.

Prerequisite to major subject: Botany 116 and Economics 1.

Foreign language: A reading knowledge of Spanish, German, and Italian advised; at least Spanish or German required.

Recommended electives: Physical Geography 2, Surveying (C. E. 1), Botany 109.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Botany 116	3	Citriculture 101	4
Botany 105A	3	Citriculture 103	2
Plant Pathology 2	3	Plant Pathology 121	2
Entomology 122	3	Horticulture 12 or soils 101	3
Irrigation 103	3	Irrigation 101	3
Elective	1	Entomology 2	2
	16		16

SENIOR

First Half-year

Citriculture 102	4
Citriculture 103	2
Thesis	2
Agronomy 118	3
Pomology 104	3
Elective	2
	16

Second Half-year

Thesis	2
To be arranged	14
	16

LANDSCAPE GARDENING AND FLORICULTURE

The growing of cut flowers under glass is rapidly increasing in the State. Students receive practical training in this phase of commercial floriculture.

The course in Landscape Gardening is designed, first, to offer professional instruction both theoretical and practical to those who desire to become either successful practitioners of the art, competent office assistants, or reliable superintendents of construction; and second, to furnish instruction of an untechnical nature that will enable others to become familiar with the fundamental principles governing the art to the extent that they may be appreciative of correct design and all that is beautiful in nature.

While the course offers opportunity to specialize in landscape gardening, subjects common to all courses in the College of Agriculture are considered fundamental and preparatory for those of a more highly specialized character to follow. Students intending to major in landscape gardening should consult freely and as early in their course as possible with the instructor in charge, in order that proper electives may be determined to meet the requirements of the individual. One or more years of graduate study is advised.

The course in Floriculture is designed to furnish theoretical and practical instruction to those who intend to become eventually wholesale or retail commercial growers of cut flowers and potted plants, competent florists on private estates or in public parks. As facilities permit students will be allowed to specialize in the growing of certain crops, store management, including artistic design and decoration, or other phases of commercial floriculture. To this end proper electives should be chosen in consultation with the instructor.

COURSE OF STUDY

A. Landscape Gardening

Interdivisional summer course of six weeks; six units credit, arranged to give a general survey of the Art of Landscape Gardening or to meet the needs of individual students.

Prerequisite to major subject: Botany 116. Civil Engineering 1A-1B, 1C-1D; Drawing A-B or matriculation subject 16, Drawing C-D or matriculation subject 17.

Foreign languages: A reading knowledge of both French and German advised; at least one is required.

Electives will be recommended by the head of the division, according to the needs of the individual student.

EXAMPLE OF PROGRAMME

Junior

First Half-year		*Second Half-year*	
Landscape Gardening 103	4	Landscape Gardening 105	4
Landscape Gardening 104A	2	Landscape Gardening 104B	2
Drawing 2A	3	Drawing 2B	3
Drawing 114A	2	Drawing 114B	2
Botany 116	3	Elective	5
Elective	2		
	16		16

Senior

First Half-year		*Second Half-year*	
Landscape Gardening 106A	4	Landscape Gardening 106B	4
Landscape Gardening 104C	2	Landscape Gardening 108	4
Civil Engineering 6	2	Thesis	2
Thesis	2	Elective	6
Elective	6		
	16		16

COURSE OF STUDY

B. FLORICULTURE

Interdivisional summer course of six weeks; six units arranged to give a general survey of the field of Commercial Floriculture, or to meet the needs of individual students.

Prerequisites to major subject: Botany 116 and Economics 1.

Foreign languages: A reading knowledge of both French and German advised; at least one is required.

Electives will be recommended by the head of the division, according to the needs of the individual student.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Floriculture 102A	4	Floriculture 102B	4
Botany 116	3	Elective	12
Elective	9		
	16		16

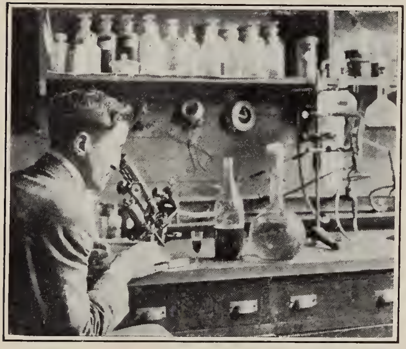
SENIOR

First Half-year		*Second Half-year*	
Floriculture 103	4	Floriculture 104	4
Thesis	2	Thesis	2
Elective	10	Elective	10
	16		16

VITICULTURE AND ENOLOGY

The growing of grapes and the industries based thereon are in a peculiar sense Californian, and California is the only state in the Union which possesses a special department of Viticulture and Enology. Instruction in these subjects is given to regular and special students at Berkeley by means of courses of lectures on grape growing, wine making and technical zymology, supplemented by laboratory courses in the chemical and physical examination of vines and vineyard products and in the preparation and use of yeasts.

The aim of these courses is to prepare students to become efficient managers of vineyards, cellars and packing houses or educators and specialists in the various viticultural and fermentative industries.



Chemical and microscopical examination is of great aid in the production of pure wine.

The ultimate profit of a vineyard depends in great measure on the proper treatment of the young vines.

The study and use of pure cultures of micro-organisms is the foundation of improvements in the fermentative industries.

At Davis appropriate instruction in grape growing is given to farm students and short practical courses to University students and farmers.

At suitable points throughout the State instruction is given to those actually engaged in the industries by means of institute lectures and vineyard and cellar demonstrations in co-operation with the Department of Extension in Agriculture.

The work of investigation is carried out at Davis, Kearney, and Imperial in special experiment vineyards, at Berkeley in the viticultural and zymological laboratories and at various points where special problems can be most effectively attacked.

COURSE OF STUDY

A. VITICULTURE

Viticulture and Enology 99 preceding Upper Division to be arranged.

Prerequisite to major subject: Principles of Economics 1A and Economic Botany 116.

Foreign languages: A reading knowledge of French, German, and Italian advised; either French or German is required.

Recommended electives: Agriculture 102, 104, 118, and 121; Agronomy 8, 5, 120B; Insect Biology 1, 13; Insecticides 16, 119; Horticulture 12; Plant Pathology 2, 121; Pomology 101, 104; Soils and Fertilizers 101, 124; Viticulture and Enology 114, 112; Agricultural Education 101, 103; Education 105; Botany 105, 109; supplementary courses in foreign languages.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Botany 116 (Econ. Botany)	3	Viticulture and Enology 116	3
Agronomy 118 (Farm Man.)	2	Viticulture and Enology 117	2
Mech. and Elec. Eng. 8A	2	Irrigation 103	3
Pomology 101	3	Plant Pathology 121	2
Botany 105A	3	Other electives	6
Entomology 4	2		16
Other electives	1		
	16		

SENIOR

First Half-year		*Second Half-year*	
Economics 1A	3	Economics 1B	3
Viticulture and Enology 114	3	Horticulture 12	3
Mech. and Elec. Eng. 9A	2	Soils and Fertilizers 124	2
Irrigation 104	2	Agricultural Chemistry 102	2
Pomology 104	3	Thesis	2
Thesis	2	Other electives	4
Other electives	1		16
	16		

B. ENOLOGY

Viticulture and Enology 99 preceding Upper Division to be arranged.

Prerequisite to major subject: Chemistry 5.

Foreign languages: A reading knowledge of French, German, and Italian advised; either French or German required.

Recommended electives: Agricultural Chemistry 101, 102; Agriculture 102, 104; Agronomy 8; Entomology 119; Horticulture 12; Nutrition 2, 3, 110, 117; Pomology 101, 104; Soils and Fertilizers 124; Viticulture and Enology 117; Agricultural Education 103; Education 105; Botany 105; Chemistry 8, 9; Mechanical and Electrical Engineering 8, 9; supplementary courses in foreign languages.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Chemistry 5	3	Viticulture and Enology 116	3
Chemistry 8A	2	Viticulture and Enology 112	3
Mech. and Elec. Eng. 1A	3	Viticulture and Enology 115	3
Mech. and Elec. Eng. 8A	2	Chemistry 8B	2
Nutrition 2	2	Other electives	5
Other electives	4		16
	16		

SENIOR

First Half-year		*Second Half-year*	
Viticulture and Enology 114	3	Viticulture and Enology 122B	3
Viticulture and Enology 122A	3	Economics 1B	3
Chemistry 9	2	Thesis	2
Economics 1A	3	Other electives	8
Thesis	2		16
Other electives	3		
	16		

SOILS AND FERTILIZERS

Success in farming depends in large measure on knowing one's soil types.

As the curriculum for specialists in soils and soil fertility indicates, the training given will consist of comprehensive courses on what experience has shown to be the most essential phases of the subject. A thorough grounding on the characteristics of soils as regards their texture, chemical composition, and bacteriological characters will be given and a correlation between these factors and plant nutrition emphasized. To that end there will be given not only laboratory work in a specialized way bearing on soil physics, soil chemistry, soil bacteriology, the nature of fertilizers and plant physiology, but additional work in the field on which most emphasis is to be placed, and will take up soil surveys and the study of soil types, as well as methods of tillage and a study of farm machinery. The training as thus outlined will be a thorough preparation for soil fertility and agronomy work in their more specialized phases.

With the education given to those specializing in soils and fertilizers, the graduate will be prepared to do professional work in soils in the government service, or in the service of state universities and colleges and state experiment stations in the fields of agronomy, soils, soil fertility and fertilizers. For those desiring to specialize for either government or state service, and particularly for research work in such service, at least one year of graduate work for which facilities are amply provided is strongly urged.

Every encouragement will be offered to those desiring to pursue post-graduate studies on problems in soils and soil fertility.

COURSE OF STUDY

Summer course in Soil Surveying must precede Upper Division work for those whose major is in this subject.

Prerequisite to major subject: Pathology 1, Chemistry 6.

Foreign languages: A reading knowledge of both German and French required. Thorough training in German, technical prose or equivalent. One year of French.

Recommended electives: Mineralogy 1A-1B, Economic Botany, Entomology courses on field and forage crops.

EXAMPLE OF PROGRAMME

JUNIOR

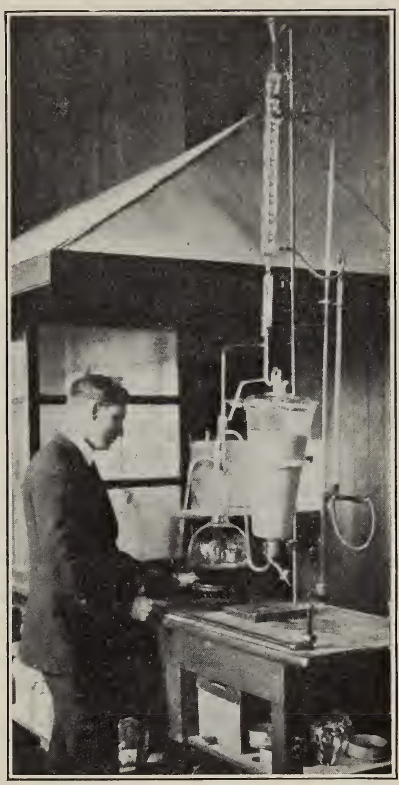
First Half-year		*Second Half-year*	
Soils 122	3	Soils 123	3
Pomology 101	4	Soils 126	1
Soils 126	1	Soils 101	3
Agronomy 120A	2	Irrigation 5	3
Elective	6	Soils 102	2
	16	Elective	4
			16

(Summer practice in General Agriculture at University Farm, Davis, strongly urged.)

SENIOR

First Half-year		*Second Half-year*	
Soils 127	3	Soils Investigation (Thesis)	4
Soils 125	2	Irrigation 103	3
Soils 126	1	Soils 126	1
Irrigation 104	2	Citriculture 101	4
Plant Pathology 121	2	Elective	4
Elective	6		16
	16		

NUTRITION



The Nutrition Laboratory is actively engaged in the preparation of pure proteins to be used in metabolism experiments with poultry.

Instruction is offered in both animal and human nutrition in the form of lectures, recitations and laboratory exercises in both Upper and Lower Division courses.

Animal Nutrition. — The object of the general lecture course is to familiarize the student with the fundamental principles of nutrition, the needs of the animal body, and the most effective and economical methods of supplying these needs in relation to the purpose for which the animal is reared and kept. This knowledge is highly essential to those electing animal and poultry husbandry.

The laboratory offers facilities for the student to acquire technique in making examinations and analyses of cattle and poultry foods and determining the proportion of valuable constituents as well as the presence of worthless or harmful admixtures. The student also has the opportunity of conducting experiments that have a practical as well as a scientific interest.

Instruction is offered in both animal and human nutrition in the form of lectures, recitations and laboratory exercises in both Upper and Lower Division courses.

Animal Nutrition.—The object of the general lecture course is to familiarize the student with the fundamental principles of nutrition, the needs of the animal body, and the most effective and economical methods of supplying these needs in relation to the purpose for which the animal is reared and kept. This knowledge is highly essential to those electing animal and poultry husbandry.

The laboratory offers facilities for the student to acquire technique in making examinations and analyses of cattle and poultry foods and determining the proportion of valuable constituents as well as the presence of worthless or harmful admixtures. The student also has the opportunity of conducting experiments that have a practical as well as a scientific interest.

Human Nutrition.—The object of the lecture course is to give the student a thorough knowledge of the principles of human nutrition, the process of digestion and metabolism, the chemical composition of foods and their relation to the needs of the body. The methods are also considered of applying these principles to daily life and the methods of constructing dietaries for individuals and groups forms a large part of the advanced work. This is in line with the modern effort at the conservation of human life. Additional work is offered for the student specializing in Home Economics.

The laboratory work gives facilities both to those who wish simply to become familiar with the ordinary tests for foods, adulterants, etc., and also for those desiring to train as food or sanitary chemists.

COURSE OF STUDY

Summer practice course is prescribed. Owing to the technical nature of the work in Nutrition, this work will be arranged to meet the needs and opportunities of the individual student.

Prerequisite to major subject: Chemistry 6.

Foreign language: A reading knowledge of German, French, or Spanish is required.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

Nutrition 2	2
Nutrition 114	2
Nutrition 109	3
Agronomy 14	3
Chemistry 8A	2
Elective	4
	16

Second Half-year

(a) At Berkeley—Specializing in Human Nutrition

Nutrition 106	2
Nutrition 116	2
Nutrition 117	3
Chemistry 8B	2
Chemistry 9	2 or 3
Electives	5 or 4
	16

(b) At Davis—Specializing in Animal Nutrition

Animal Husbandry 101 or Poultry Husbandry 101	4 or 3
Dairy Industry 116	2
Agronomy 111	3
Farm Mechanics 101	4
Veterinary Science 111	4
	16 or 17

SENIOR

First Half-year

Nutrition Seminar and Lab.	5
Thesis	4
Nutrition 119	3
Elective	4
	16

Second Half-year

Nutrition Seminar and Lab.	5
Entomology 127	2
Entomology 126	3
Thesis	4
Elective	2
	16

For graduate work see Announcement of Courses.

AGRICULTURAL CHEMISTRY

Students are taught to make chemical analyses of water, insecticides and various agricultural materials and products.

Chemistry offers the only available methods for the more precise measurement and proper study of many of the most important phenomena observed in agriculture. In this lies the justification for courses in chemistry dealing with agricultural materials. These substances are so sensitive to their surroundings, their natural environment is of such a complex character and so difficult to control in practice that the two cannot be adequately considered independently. The courses included in the Curriculum in Agricultural Chemistry are designed to familiarize the student not only with materials and methods of manipulation, but with facility in interpreting his results and the practical utilization of the data obtained. Training of this type offers preparation for the career of teacher, investigator or professional agricultural chemist, in all of which there is abundant opportunity.

COURSE OF STUDY

Summer practice course is prescribed. Owing to the technical nature of the work in Agricultural Chemistry this work will be arranged to meet the needs and opportunities of the individual student.

Prerequisite course which should be taken in the sophomore year: Chemistry 6A and 6B.

Foreign language: A reading knowledge of French or German is required; German advised.

Students should consult the major professor on all Upper Division elective work.

EXAMPLE OF PROGRAMME

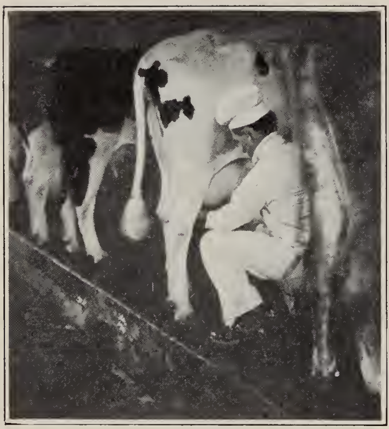
JUNIOR

First Half-year		*Second Half-year*	
Agricultural Chemistry 101A	3	Agricultural Chemistry 101B	3
Agricultural Chemistry 102	3	Chemistry 8B	2
Chemistry 8A	2	Chemistry 9	2–3
Botany 116	3	Elective	7
Elective	5		
	16		16

SENIOR

First Half-year		*Second Half-year*	
Soils 122	3	Soils 123	3
Food Adult. (to be arranged)	3	Agric. Chemistry 103B (Thesis Course)	4
Agricultural Chemistry 103A	3	Elective	9
Elective	7		
	16		16

ANIMAL HUSBANDRY



The certified dairy in Berkeley is utilized for student instruction.

The instruction in Animal Husbandry consists of classroom and practice work in judging, feeding, breeding and management of the various classes of farm animals. The courses are intended to give a knowledge of the recognized types and breeds of farm animals and of the principles underlying the successful management of a livestock business. The work is planned essentially for men who expect to become farmers and stock men, and with this end in view is made as practical in its nature as possible. The University Farm is well equipped with modern buildings, and flocks and herds of high class representatives of most of the pure breeds of farm animals are maintained for study and use in class rooms.

The dairy breeds of cattle are represented by herds of Holsteins, Guernseys, and Jerseys. It is hoped that Ayrshires may be added during the year. A herd of grade cows representative of the better class of cows now in the working dairies of the state is kept for experimental use and for demonstration of how such a herd may be improved by modern methods of breeding and selection. Herds of Short Horn, Herford, and Aberdeen Angus cattle represent the beef breeds. Steers bred and fed at the University Farm have received the highest awards at the last two California state fairs. These have been pure bred steers developed for class work.

Draft horses of the Percheron and Shire breeds, together with high class mules, are used for the farm work. These, with a few standard bred and Kentucky saddle horses, furnish material for study in this line.

Representative herds of hogs of the Poland China, Duroc Jersey, Berkshire, and Tamworth breeds are at present maintained, with the probability that Chester Whites and Yorkshires will be added during the year.

The middle wool breeds of sheep—Shropshire, Hampshire, and Southdown—are strongly represented in the University flocks. Fine wool and long wool breeds are to be added.

The University Farm is fortunately situated in that some of the best herds of beef cattle and of sheep in the state are owned in the vicinity and are available for the use of classes in judging and livestock management.

COURSE OF STUDY

Summer course including livestock husbandry and practice in surveying must precede Upper Division for those whose major is in this subject.

Prerequisite to major subject: General Zoology, Elementary Bacteriology, Introductory Physiology.

Foreign language: A reading knowledge of German or French is required.

Recommended electives: Physiology 1 in Lower Division; courses in Nutrition, Zoology, Economic Botany, Farm Management, Agricultural Education.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year* *At University Farm, Davis*	
Animal Husbandry 100	3	Animal Husbandry 101	4
Agriculture 14	3	Animal Husbandry 105	4
Veterinary Science 117	3	Dairy Industry 127	3
Pomology 101	4	Veterinary Science 111	4
Elective	3	Elective	4
	16		19

SENIOR

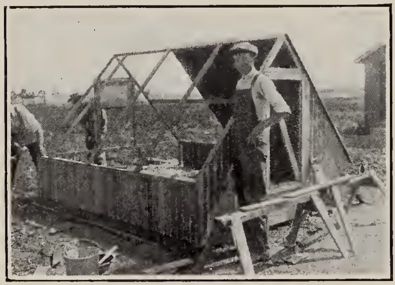
First Half-year		*Second Half-year* *At University Farm, Davis*	
Thesis	2	Thesis	2
Agriculture 118	3	Animal Husbandry 107	4
Entomology 116	4	Irrigation 106	3
Economics 1A	3	Farm Mechanics 101	4
Elective	4	Animal Nutrition	3
	16	Elective	3
			19

POULTRY HUSBANDRY

Students are given practice in hatching chicks.

A complete course of instruction is now being offered in all the main branches of poultry work, including breeding, feeding, housing, judging, incubation, brooding and marketing.

In addition to the teaching, certain experimental work, to discover new facts and thus improve the present methods of poultry keeping, is in progress. A one-year experiment, is now being carried on to find the relative advantages of soy bean meal, meat scrap, and fish scrap as protein feeds for laying and breeding hens. Other experiments will soon be started to find the effect of confinement on laying hens, the cost of rearing chicks, better methods of incubation and the cost of raising ducks for both market and laying. Metabolism experiments are also being carried on at Berkeley for the purpose of ascertaining the relative physiological values of the different concentrated proteins so necessary for successful egg production.



Practical laboratory and field work in designing and building poultry houses goes hand in hand with the class-room lectures in poultry house construction.

COURSE OF STUDY

Summer course preceding Upper Division must be taken at the University Farm, Davis, by those whose major is in this subject.

Prerequisite to major subject: Zoology 1, Physiology 1.

Foreign language: A reading knowledge of German or French is required.

Recommended electives: Bacteriology, Physiology, Hygiene.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year* *At University Farm, Davis*	
Agronomy 118	3	Poultry Husbandry 101	3
Irrigation 103	2	Poultry Husbandry 102	3
Nutrition 114	2	Farm Mechanics 101	4
Elective	9	Dairy Husbandry 127	3
	16	Veterinary Science 118	3
			16

SENIOR

First Half-year			
Agricultural Education 102	3	Agronomy 107	3
Agronomy 6 or Irrigation 101	3	Poultry Husbandry 104	2
Entomology 116	4	Poultry Husbandry 105	3
Thesis	2	Thesis	2
Elective	4	Elective	6
	16		16

Embryology is very desirable in conjunction with the incubation work.

VETERINARY SCIENCE

The veterinary clinic affords opportunity for students to obtain instruction concerning the common diseases of farm animals.

The courses offered are designed to supplement the instruction in animal husbandry, poultry husbandry, nutrition, agricultural education, parasitology, hygiene and public health. The instruction in veterinary science does not prepare for the practice of veterinary medicine, although the equivalent of the first year of work in any veterinary college may be obtained by electing the courses suggested in the list announced herewith.

The following equipment and activities are under the supervision of members of the staff of the veterinary division and are utilized in instruction.

The Veterinary Clinic at the University Farm, Davis, affords opportunity for students to obtain instruction concerning the more common unsoundness and non-infectious diseases of farm animals. The veterinary building at Davis, used exclusively for the conduct of this clinic, is equipped with all that is necessary for advanced work in comparative pathology and bacteriology, including dairy bacteriology.

The Veterinary and Dairy Bacteriology Laboratory at Berkeley occupies a separate building and is equipped with all necessary apparatus for advanced work in bacteriology and pathology.

The University of California Certified Dairy in Berkeley is a self-supporting institution and is run as a first class market milk dairy, producing certified milk, cream, and skim milk. This dairy is utilized for student instruction. The equipment consists of 120 acres of pasture land, a barn and sanitary milking stable, a milk house equipped with a refrigerating plant, sterilizer, bottling machine and other modern dairy machinery.

The Hog Cholera Serum Laboratory is situated in East Oakland. Anti-hog cholera serum and vaccine are manufactured here and sold to farmers at actual cost of production. The sales during the past year were sufficient to immunize 50,000 hogs. About 200 head of swine are maintained at this laboratory for use in making the serum and vaccine.

The Veterinary Tract is 100 acres of land in Strawberry Canyon, Berkeley, set apart by the Regents of the University to be used in experimental work concerning bovine tuberculosis. The equipment consists of two barns and a cottage. At present 60 head of cattle are maintained here for purposes of research concerning tuberculosis.

Dairy Certification consists of expert work in the supervision of certified dairies for the San Francisco County and Alameda County Medical Milk Commissions. This includes bacteriological examinations of milk, semi-monthly inspections of dairies, distributing stations and wagons, and the semi-annual tuberculin testing of about 1000 dairy cows. Students are given an opportunity to take part in a portion of this work.

Dairy certification consists of expert work in the supervision of certified dairies. This also includes bacteriological examination of milk.

The Official Testing of Dairy Cows is carried on in co-operation with the various American cattle clubs and associations. Authorized representatives are sent from this station to supervise milk and butter fat records of registered pure bred cows for owners desiring such tests made. These tests afford opportunity for competent students to observe the best types of large producing cows of the different breeds and to obtain practical knowledge when making visits to the different pure bred dairy herds in this state.

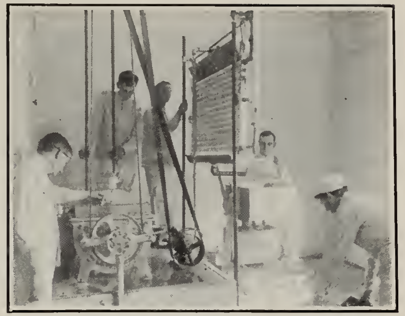
OUTLINE OF COURSES

Suggestions for students who intend eventually to take a veterinary course in another institution.

The completion of the following courses will satisfy the minimum requirements for the first year's work in most first-class veterinary colleges:

Matriculation Physics;
Matriculation Chemistry;
Zoology 1A and 5;
Physiology 1;
Laboratory Botany;
Animal Husbandry (Judging, Breeding, Feeding);
Dairy Industry 16;
Veterinary Science 111 and 118;
Elementary Bacteriology (Pathology 1).

DAIRY INDUSTRY



The instruction offered in dairying consists of lectures and laboratory work pertaining to the care and handling of milk and cream and the manufacture of dairy products. The instruction offered is of three classes: (1) for University students who are candidates for degrees, (2) for students of the University Farm School, (3) for practical dairymen and creamerymen. The latter courses are known as Short Courses. During the fall of 1913 two distinct short courses were offered, one an eight weeks' course for creamerymen and the other a four weeks' course for dairy farmers, given in co-operation with other divisions.

The equipment at the University Farm is ample for all of the above work. It includes a commercial creamery, receiving milk and cream from more than sixty-five dairies, which is in daily operation and equipped to handle and manufacture dairy products in an approved manner; market milk machinery, including a milk pasteurizer, bottling machine, sterilizer and many different makes of separators; complete apparatus for cheesemaking; icecream making equipment, including a large brine freezer, a small power freezer and an ice crusher; refrigeration machinery and an ice plant; shop and tools for dairy mechanics; testing laboratory with steam, hand and electric testers and other apparatus necessary for making the ordinary commercial tests of dairy products. During the past year the Dairy Building has been remodeled, increasing the facilities for handling students. The laboratory work for the students is practical and similar to the work which would be required of a person in a commercial position and on the dairy farm.

COURSE OF STUDY

Summer course preceding Upper Division at University Farm, Davis, for those whose major is in this subject.

Prerequisite to major subject: Pathology 1, Chemistry 5.

Foreign language: A reading knowledge of German or French required; German advised.

Recommended electives: Dairy Industry, Bacteriology, Economics 1, Animal Husbandry, and Irrigation.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Chemistry 5	3
Veterinary Science 117	3
Nutrition 114	2
Animal Husbandry 100	3
Agriculture 14	3
Elective	2
	16

Second Half-year *At University Farm, Davis*	
Dairy Industry 127	3
Animal Husbandry 105	4
Farm Machinery 101	4
Veterinary Science 111	4
Elective	4
	19

SENIOR

First Half-year	
Agronomy 118	3
Veterinary Science 119	3
Entomology 116	4
Thesis	2
Elective	4
	16

Second Half-year *At University Farm, Davis*	
Irrigation 106	3
Animal Husbandry 107	3
Agronomy 111	3
Animal Husbandry 101	4
Dairy Industry 116	2
Thesis	2
Elective	2
	19

ENTOMOLOGY

There are nearly 10,000 named insects in California.

The work in Entomology comprises the following divisions: Apiculture, Insecticides, Insecticide Control, Insect Biology, Parasitology, Museum.

Apiculture. — The University maintains an apiary on the Campus and one at Davis in which students obtain practical experience in the handling of bees, including the modern methods of queen rearing, in addition to the theoretical course of lectures. Students may take advanced work in the structure or physiology of bees or in bee diseases.

Insecticides.—Instruction includes the general course in economic entomology both at Berkeley and Davis and supplementary courses at Berkeley in spraying, eradication methods, horticultural laws and insecticide inspection, and lectures in the graduate department on the effect of adverse conditions on growth and the causes of death.

The laboratory courses afford opportunity for securing a practical acquaintance with insect pests and for original research in economic problems. Field work is provided during the appropriate season for the study of actual orchard practice in the use of insecticides.

Insecticide Control.—The State Laboratory for the control of commercial insecticides and fungicides is located in the same building and is very closely associated with the work of the research laboratories. It is the duty of this institution to examine samples of insecticides or fungicides for any user of these materials for a nominal fee to determine whether they conform

Models are a great aid in the study of the structure of insects.

to the guarantee under which they are sold. No insecticides or fungicides are saleable in this State until registered in this office and a license secured to sell the same.

Insect Biology.—The study of the classification, structure, development and life processes of insects form the major part of the instruction in Entomology, because these subjects constitute the basis of all the other work.

In this division ample provision is made for those who desire to pursue the study of entomology as a pure science and special provision is made for students of sensory reactions, of classification, and of microscopic anatomy.

Museum.—The entomological collection has just been housed in the new fire-proof Agriculture Hall and an extensive system of exchanges from all over the world inaugurated, through which this division will come to be one of the important centers for systematic work. This division also has charge of the general Agricultural Museum displaying the activities of all the departments of agriculture.

A. Insect Biology

The study of the classification, structure, development and life processes of insects serves as a basis for research work in all departments of economic entomology and for work in pure science.

COURSE OF STUDY

Summer course preceding Upper Division to be arranged.

Prerequisite to major subject: Entomology 6.

Foreign language: A reading knowledge of French or German is required.

Recommended electives: Entomology 1 and 3, Botany 109A and 109B. 111A and 111B, and Zoology 107 and 108.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Entomology 111 or 112	3	Entomology 113 or Scientific Illustration 101	3
Botany 109A	3	Botany 109B	3
Plant Pathology 2	3	Plant Pathology 121	3
Elective	7	Elective	7
	16		16

SENIOR

First Half-year		*Second Half-year*	
Entomology 121A or 127	3	Entomology 121B	3
Zoology 107	4	Zoology 108	4
Entomology 116	3	Entomology 126	3
Thesis	2	Thesis	2
Elective	4	Elective	4
	16		16

B. INSECTICIDES

This division is entrusted with the administration of the State Insecticide law, with chemical, bacteriological and physiological laboratories for research upon insecticides and fungicides. Provision is made for advanced study in all phases of horticultural entomology.

COURSE OF STUDY

Summer course preceding Upper Division to be arranged.

Prerequisite to major subject: Entomology 3.

Foreign language: A reading knowledge of French or German is required.

Recommended electives: Entomology 5 in Lower Division if possible, Chemistry 6A and 6B.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Entomology 121	3	Entomology 118	3
Plant Pathology 2	3	Plant Pathology 121	3
Agriculture 14	3	Horticulture 12	3
Elective	7	Elective	7
	16		16

Senior

First Half-year		*Second Half-year*	
Entomology 119	3	Insecticides 120	3
Zoology 104	2	Zoology 103	2
Pomology 103	3	Viticulture 116	3
Thesis	2	Thesis	2
Elective	6	Elective	6
	16		16

C. Forest Entomology

A strong demand has arisen the last few years for men especially qualified to care for forest and shade trees to prevent the damages due to insects and fungi. Abundant opportunity for field practice in the Bay region is found easily accessible from the University.

COURSE OF STUDY

Summer course preceding Upper Division to be arranged.

Prerequisite to major subject: Entomology 6.

Foreign language: A reading knowledge of French or German is required.

Recommended electives: Entomology 1 and 5.

EXAMPLE OF PROGRAMME

Junior

First Half-year		*Second Half-year*	
Entomology 114A	3	Entomology 114B	3
Plant Pathology 2	3	Plant Pathology 121	3
Landscape gardening 101	3	Horticulture 12	3
Elective	7	Elective	7
	16		16

Senior

First Half-year		*Second Half-year*	
Entomology 132A	3	Entomology 132B	3
Plant Pathology 122A	3	Plant Pathology 122B	3
Landscape Gardening 102	3	Pomology 102	4
Thesis	2	Thesis	2
Elective	5	Elective	4
	16		16

PARASITOLOGY

The subject of Parasitology deals with animal parasites as causative organisms of disease and as disease carriers. It is the aim to protect the health and well being of man and of the domesticated animals as well as of the more important game animals through the control of such parasites.

Owing to the semi-tropical climate of California and its proximity to the Orient, the field of parasitology is here of more than usual interest and importance and the opportunity for study and research in this direction cannot be excelled. A good collection of carefully prepared parasitic protozoa, smaller worms, insects and arachnids is available for microscopical study.

Life history, habits, and especially control, receive major emphasis, and for this purpose breeding cages and experimental animal cages are at hand, as well as a fully equipped dark room for sensory reaction experiments, and photographic dark rooms.

Some of the problems receiving attention are as follows: Malaria, poliomyelitis, house flies and the public health, bionomics of fleas, ticks, etc., parasites of poultry, parasites of the deer, liver flukes in sheep, scab and mange in domesticated animals, etc.

During the past three years five systematic campaigns against malaria have been organized in the Sacramento and San Joaquin valleys. These campaigns have been eminently successful in reducing malaria in a very decided manner in each locality. Assistance has also been rendered in organizing a number of house fly crusades in various parts of the state.

COURSE OF STUDY

Summer course in Parasitological Laboratory or in practical field operations must precede the Upper Division for those whose major is in this subject.

Prerequisite to major subject: General Zoology, Elementary Bacteriology, Epidemiology (Hygiene 3), Parasitology 1.

Foreign language: A reading knowledge of both German and French strongly advised.

Recommended electives: Students choosing Parasitology as their major subject are expected to elect the following courses as early as possible: Zoology 1, Pathology 1 (Bacteriology), Hygiene 3 (Epidemiology), Physiology 1, Physical Geography 2, Physics 2A, Entomology 1 and 4, and Parasitology 1.

EXAMPLE OF PROGRAMME

Junior

First Half-year		*Second Half-year*	
Jurisprudence 18A	2	Jurisprudence 18B	2
Economics 110A	3	Hygiene 106	2
Hygiene 104	3	Entomology 126	3
Entomology 116	4	Entomology 115	2
Elective	4	Elective	7
	16		16

Senior

First Half-year		*Second Half-year*	
Zoology 110	3	Civil Engineering 24	3
Veterinary Science 117	3	Pathology 102	2
Entomol. 129A (includes Thesis)	3	Entomol. 129B (includes Thesis)	4
Entomology 200A	1	Entomology 200B	1
Elective	6	Elective	6
	16		16

First-Year Graduate

First Half-year		*Second Half-year*	
Entomology 214	3	Entomology 216	3
Entomology 201A	4	Entomology 201B	4
Entomology 200A	1	Entomology 200B	1
Elective	----	Elective	----
	8		9

PLANT PATHOLOGY

The division of Plant Pathology has experimental fields of potatoes and other crops in variout parts of the State for the study of diseases.

The work in plant diseases is designed to give, as nearly as possible, a correct understanding of the principles involved in plant disease control and when taken with certain correlated subjects to furnish students the training necessary for undertaking intelligently the practical control measures which may be involved in any agricultural industry.

A considerable number of students will desire to acquire a more detailed knowledge of the methods of study and of the nature and causes of plant troubles than is implied in the usual execution of horticultural measures. Such training would be suitable for teachers of agriculture in high schools and for horticulturists. This would imply the ability to judge the correctness of method in reported studies and the ability to do valid investigation within the limits of training and facilities. A considerable number of students may expect to prepare a senior thesis in this division, without having the intention of becoming technical plant pathologists.

Students intending to take advanced or special work on plant diseases should lay a thorough foundation in the allied subjects, particularly in botany, and in chemistry, soils, bacteriology. entomology, modern languages, and actual experience in the production and handling of crops. The growing demand for specialists in this line, both in California and elsewhere, has led to increased facilities for instruction and specialization in the investigation of phytopathological problems, while the natural opportunities afforded for such training in California may fairly be said to be of the highest order.

Training for the specialist will vary considerably, according to the type of work which he is adapted to follow. The student of parasitic troubles should be particularly well trained in systematic and physiological mycology, and bacteriology, organic chemistry, physiology, immunity. The field and practical plant pathologist should be particularly well trained in systematic and physiological botany, soils, irrigation, plant breeding, entomology and agricultural practice. Perhaps the most exacting training of all is required by the student of physiological plant diseases, whose preparation should be particularly thorough in physiological botany, physiology, organic chemistry, and physiological chemistry, in addition to a sound training in all related branches.

COURSE OF STUDY

Interdivision course must precede work of Upper Division for those whose major is in this subject.

Prerequisite to major subject: Botany 105A.

Foreign language: For the normal training for a technical plant pathologist the minimum of foreign language should be Latin, 2 years; German, 2 years; French, 1 year; and if possible these should be taken in the order named. Further training in these and other languages, especially Italian, is desirable. For practical horticulturists the Latin may be omitted.

Recommended electives: Plant Pathology 2 and Botany 1A, 1B in Lower Division if possible. Entomology 1 and 13, Botany 116.

EXAMPLE OF PROGRAMME

First Half-year	JUNIOR	*Second Half-year*	
Chemistry 5	3	Plant Pathology 121	2
Botany 104A	3	Chemistry 8B	2
Chemistry 8A	2	Chemistry 8C	3
Correlated courses in Agric.	3	Botany 104B	3
Elective	5	Correlated courses in Agric.	3
		Elective	3
	16		16

First Half-year	SENIOR	*Second Half-year*	
Plant Pathology 122A	3	Plant Pathology 122B	3
Plant Pathology 123A	3	Plant Pathology 125B (Thesis)	2
Plant Pathology 125A (Thesis)	2	Botany 109B	3
Botany 109A	3	Correlated courses in Agric.	3
Correlated courses in Agric.	3	Elective	5
Elective	2		16
	16		

IRRIGATION

Irrigation surveying is included in the courses of instruction.

The instruction in Irrigation and Drainage offered by the Department of Irrigation for students in the College of Agriculture is designed to met the needs of the following classes of students:

First. — Those who are planning to use a knowledge of irrigation practice as a tool to successful agriculture. That such a knowledge is important is shown by the fact that in 1910 about 45 per cent of all farms in California were irrigated. For these students the following courses: Irrigation 1, 3, 4, and 5, are recommended; these courses may be elected by students who have chosen their major subjects from one of the groups other than Irrigation.

Second.—Those who are preparing themselves for positions in the operation, maintenance and management of irrigation systems and companies; for investigational work such as that carried on by the United States Department of Agriculture or in agricultural colleges.

Third.—Those who desire a technical course, more closely allied to the work of the irrigation engineer, and who wish to prepare themselves for the position of irrigation superintendent or manager of irrigation systems.

For the second and third classes of students, respectively, a liberal course and a technical course in Irrigation are outlined, giving the proper correlation and sequence of allied subjects.

COURSE OF STUDY

A. Liberal Course

For students in the College of Agriculture who wish to prepare for Irrigation Farmer, Water Master, or Irrigation Manager.

Summer School Surveying (C. E. 3A) prescribed.

Prerequisite to major subject: General Physics (2A-2B), Elements of Analysis (Math. 1A-1B), and Surveying.

Foreign language: A reading knowledge of French and ability to use Spanish is advised; a reading knowledge of French or German is required.

Recommended electives: Drawing D in Lower Division. Geography 2, Jurisprudence 18A-18B, Mechanical Engineering 1A-1B, Mineralogy 1A-1B, Civil Engineering 8D, Civil Engineering 6, Soils 122, 124, Civil Engineering 16, Economics 114C, Irrigation 207.

Courses correlated with major subject shall be taken from one of the three following combinations: 1st, Soils and Agronomy; 2nd, Soils and Horticulture; 3rd, Farm Management and Economics.

EXAMPLE OF PROGRAMME

Junior

First Half-year		*Second Half-year*	
Irrigation 103	2	Irrigation 101	3
Economics 14 (Accounting)	3	Irrigation 105	3
Correlated courses in Agric.	3	C. E. 24 (Elementary water supply, Sewerage, etc.)	3
Agronomy 118	3	Elective	7
Elective	6		
	16		16

Civil Engineering 3A (Summer School), 3 units.

Senior

First Half-year			
Irrigation 104	2	Thesis	2
Irrigation 105A	2	To be arranged	14
Correlated courses	7		16
Thesis	2		
Elective	3		
	16		

B. Technical Course

For students in the College of Agriculture who wish to prepare especially for Irrigation Superintendent or Irrigation Manager.

Summer School Surveying (C. E. 3A) prescribed.

Prerequisite to major subject: Physics 2A-2B, Mathematics 3A-3B, 4A-4B, and Drawing C-D or equivalent, and Surveying.

Foreign language: A reading knowledge of French and ability to use Spanish is advised; reading knowledge of French or German required.

Recommended electives: Agronomy, Geography 2, Jurisprudence 18A-18B, Mechanical Engineering 1A-1B, Mineralogy 1A-1B, Soils 121, 122, 124, Civil Engineering 6, 8D, 16, 24; Economics 114C, Irrigation 207.

Courses correlated with major subject shall be taken from Civil Engineering and Mechanical Engineering.

EXAMPLE OF PROGRAMME

Junior

First Half-year	
Irrigation 103	2
C. E. 8A (Strength of Materials)	3
Mech. Eng. 102A (Engineering Mechanics)	3
C. E. 10 (Hydraulics)	3
Economics 14 (Accounting)	3
Elective	2
	16

Second Half-year	
Irrigation 101	3
Irrigation 102	3
C. E. 8B (Strength of Materials)	2
Mech. Eng. 102B (Engineering Mechanics)	3
Elective	5
	16

Civil Engineering 3A (Summer School); 3 units.

Senior

First Half-year	
Irrigation 104	2
Irrigation 102A	2
C. E. 6 (Highway Engineering)	2
Elective	8
Thesis	2
	16

Second Half-year	
Thesis	2
To be arranged	14
	16

UPPER DIVISION INSTRUCTION NOT REPRESENTED BY MAJOR SUBJECTS

Explanatory Note.—Certain divisions of the Department of Agriculture offer upper division instruction which is not represented by the sixteen major subjects described in the foregoing pages. The courses given may be elected by any students having the necessary preparation.

Present equipment permits of three courses, which may be grouped under the head of Farm Mechanics: (1) Shop practice in wood working; (2) Forging, in which most of the specific items of farm repair work are included; (3) Farm machinery, in which the work is taken up from the standpoint of the agronomist or general farmer rather than from that of the mechanic. The principles underlying the construction and operation of the various implements and machines are considered only in so far as they will enable the student to carefully select and successfully operate them. The time devoted to each branch of farm machinery is about as follows: Mechanical principles

All students of the Department of Agriculture have opportunity to obtain instruction in carpentry.

A knowledge of building construction is obtained through work with models.

and tillage implements, 4 weeks; harvesting machinery, 4 weeks; power machinery, including gas engines, tractors, motors, and pumps, 7 weeks. Laboratory work includes actual work in the field as far as possible. Each student is required to work up plans and specifications for either a farm workshop and power plant or a pumping plant.

Practical blacksmithing is of great value to the successful farmer.

GENETICS

Opportunity is offered to properly qualified students to pursue individual study of special topics, providing they elect a pro-seminar course, meeting at least once each week for conference, reports and discussions. For students with such major subjects as agronomy, pomology, citriculture, viticulture, floriculture, entomology, plant pathology or animal husbandry, a topic in genetics may be so chosen as to make it closely correlated with the major subject.

HORTICULTURE

Since the recognition of pomology, citriculture, and viticulture as distinct major subjects certain advanced instruction in horticulture and general agriculture is still offered, which is not represented by those major subjects. This consists of (*a*) opportunity to pursue individual study of special topics selected from the general field of horticulture, providing the student has had the necessary training; (*b*) pro-seminar in agricultural literature; (*c*) pro-seminar in agricultural extension. These courses may be correlated with various major subjects.

SCIENTIFIC ILLUSTRATION

A division is now maintained for the production of illustrative material, both drawings and photographs, to be used in the publications of the College and Experiment Station. Advanced students who wish to make illustrations in connection with work in the various branches in which they are interested may obtain instruction in photography and in free-hand and camera-lucida drawing of scientific subjects. Illustrations for these may be made under the direction of the instructor. This course is open to juniors and seniors in the second half-year.

FORESTRY

Beginning with August, 1914, a four years' course in Forestry will be offered. Freshmen will take work outlined on page 27.

GENERAL INFORMATION

EXPENSES OF STUDENTS

Tuition in the University, except in the Colleges of Medicine, Pharmacy and Dentistry, is free to residents of the state. Non-residents of California are charged a tuition of ten dollars each half-year. The following incidental expenses are to be met:

Gymnasium and Infirmary Fees.—The Gymnasium fee is $2 per half-year, and the Infirmary fee is $3 per half-year; both are payable by every student, graduate or undergraduate, before his study card is filed. These fees entitle students to gymnasium and hospital privileges, and are not remitted, in whole or in part, for those who may not desire to make use of these privileges. Gymnasium privileges comprise, besides the use of the gymnasium, tennis courts, swimming pool, baths, lockers, wash rooms, etc. The Infirmary fee entitles students, in case of illness, to hospital care (cost of surgical operations not included) or dispensary treatment. One-half of the amount of these fees is returned to students who leave the University during the first half-year before September 1, or during the second half-year before February 1.

Laboratory Fees.—In the laboratories a charge is made for materials actually used. This charge, for students in the elementary laboratories, amounts to from $5 to $30 per annum.

Military Uniforms.—Every able-bodied male undergraduate student is required to take military exercises during his first two years in the University. A sum sufficient to cover the cost of the uniform, about $18, must be deposited with the Comptroller immediately after admission. Uniforms made by any other than the authorized manufacturer will not be accepted.

Board and lodging may be obtained in private families in or near Berkeley and Oakland at from $25 to $40 a month. They may occasionally be had in return for various personal services in the household. The hours of recitation are such that many students reside in Oakland and San Francisco. The journey from San Francisco requires 40 minutes. The cost of board and lodging, in students' boarding clubs, ranges from $15 to $20 a month. A few students ''board themselves'' for as low as $15 a month, but this plan of living is not generally to be recommended.

There are no dormitories maintained by the University. Lists of boarding places approved by the University authorities are published at the opening of every session, one list for men and another for women.

The ordinary yearly expenses of a student in the academic departments, including personal expenses, need not exceed $350.

Opportunities for Self-Support.—Board and lodging can often be obtained in exchange for three or four hours of household work daily. Self-supporting students are respected. The Young Men's and Young Women's Christian Associations act as bureaus of information concerning boarding places and opportunities for remunerative employment. The office of the President will also file applications for employment, except for teaching, and assist properly qualified students in securing it. These agencies, however, can do little for students who are not actually on the ground to negotiate for themselves. It is usually so difficult for a stranger to secure remunerative employment from the start that, in general, no one should come to Berkeley expecting to become self-supporting through the University course, without having on hand at the beginning sufficient funds to cover the expenses of the first year.

SUMMER SESSION

The Summer Session of six weeks is designed for teachers and other persons who are unable to attend the University during the fall and spring sessions. An Announcement of the Summer Session is issued in March of each year and may be obtained by addressing the Recorder of the Faculties, Berkeley, California. The Summer Session of 1914 will begin June 22 and end August 1.

Dairy Building.

Water Tower and Horticulture Building.

Animal Husbandry.

Poultry Husbandry.

The agricultural youths of California have facilities for acquiring knowledge in agricultural practice.

UNIVERSITY FARM SCHOOL

CALENDAR, 1913–14

1913—Sept.	19–22	First half-year opens.
Sept.	19	Entrance examinations.
Sept.	20	Registration day.
Sept.	22	Class work begins.
Dec.	19	Christmas recess.
1914—Jan.	4	
Jan.	5	Class work resumed.
Jan.	24–30	Examination week.
Jan.	31	Second half-year opens.
Feb.	2	
Jan.	31	Registration day.
Feb.	2	Class work begins.
May	22	Commencement Day.
Sept.	18–21	First half-year opens.
Sept.	18	Entrance examinations.
Sept.	19	Registration day for new students.
Sept.	21	Registration of former students.
Sept.	22	Class work begins, 11 a.m.

The purpose of the University Farm School is to furnish technical training in agriculture to young men who are not prepared or do not wish to pursue a college course in agriculture. It is not intended as a preparation for entrance to college. The regular course of study is three years. The school year is divided into two semesters of about four months each. The first semester opens about September 18, 1914, and closes late in January; the second semester opens about February 1 and closes late in May. Instruction begins promptly at the beginning of each semester; students are expected to be present on the first day and to remain until the close. A fee of two dollars is required of every student who applies for registration at any other time than the date specified in the calendar.

The chief object of the course is to give students an understanding of the natural laws which govern plant and animal production, and of the best methods of agricultural practice. The first year is devoted largely to training in the fundamental sciences, a knowledge of which is essential to intelligent study of the technical problems of agriculture. During the second and third years a study is made of all the more important branches of agriculture which are followed in this state. A large proportion of the work is done in laboratory, field, and shop. Most of the time is given to technical subjects; but practical mathematics is studied throughout the course, while some work in English, history, civics, and economics is also included.

The basis of entrance to the Farm School is ability to pursue with profit the assigned course of study and to maintain the prescribed standard of class excellence. Applicants are not admitted below the age of eighteen years, unless they are graduates of a high school of recognized standing. Those who are not graduates of a high school are required to pass entrance examinations in English composition and arithmetic. Intrants will not be admitted to full standing until after satisfactory completion of one semester's work.

Evidence of good moral character is required from every applicant; also a satisfactory recommendation from the school last attended.

Application for admission should be accompanied by the necessary credentials. They should be sent to the Dean of the University Farm School so as to reach him, if possible, before September 1. Arrangements for board and room on the Farm should also be made in advance.

Students who live in the dormitories are subject to reasonable rules of house discipline, administered by student officers under the supervision of a resident instructor. The buildings are under the care of a matron. Each dormitory has a large, comfortably furnished living room for the common use of all its residents. The social life of the school centers about the dormitories, and the close association of dormitory life is itself a powerful educative force.

Every student is expected to conduct himself at all times as a gentleman with due respect to the rights of his neighbors and of the community in which he lives, whether in the dormitory or outside.

An association has been formed by the students of the Farm School for the support and control of all student activities. This organization is gradually developing along lines leading to student self-government. Its athletic branch arranges for interscholastic contests in various field sports. A student paper, *Agricola,* is published annually, at the close of the school year.

A limited opportunity to earn part of their expenses by labor about the Farm School may be offered to earnest students who are good workers. In general there is not enough work which can be done conveniently by students to supply the demand. Students should not come to the school expecting to earn a large part of their expenses.

EXPENSES

Board may be secured in the school dining hall at $20 per month. *Rooms* in the dormitories, one in a room, at $6 or $7 per month, and two in a room at $4 or $5 per month each. To a limited extent, board and room may be secured in the village of Davis at substantially the same prices.

Books and regular school supplies cost from $15 to $25 per year. *Special clothing* such as white suits for creamery and dark overalls and jumpers for shop and field work cost $1 each, and may be purchased locally if desired.

Fees.—Tuition is free. A registration fee of $5 per semester to cover incidental expenses is charged each student. This is $15 to non-residents of the state. In some laboratory courses where considerable material is placed at the disposal of the students, a deposit is charged at the beginning of the work, the unused portion being refunded at the completion of the work.

The expenses necessary for an eight months year vary from $225 to $275, as indicated by the following table:

Table board, per month	$20 to	$160 per year
Room rent, one in room, per month	$4 to $5	
Room rent, two in room, each per month	$6 to $7	56 per year
Books and other supplies, per year	$15 to	25 per year
Registration fee, for residents of state		10 per year
Necessary expense for residents of state, per year		$251 per year
Registration fee for non-residents of state		$30 per year
Necessary expense for non-residents of state, per year		$271 per year

Requirements for graduation are the completion of three years' work of 120 credits in approved subjects, four months' practice in approved commercial work, and presence at the commencement exercises.

COURSE OF STUDY

NOTE.—The work is estimated in terms of "credits." One credit is equivalent to one hour of class room or two hours of laboratory or practice work. In each semester the left-hand column indicates the number of one-hour periods, the middle column (in parenthesis) the number of two-hour periods, and the right-hand column the number of credits. By multiplying the total of the middle column by 2 and adding this number to the total of the first column the actual number of hours per week devoted to class work is obtained. Third-year subjects usually depend on preceding subjects and are therefore not open to first-year students.

FIRST YEAR

(*Same for all students*)

First Semester

Bot. 01, Plant Life	2	(2)	4
Chem. 01, Elements of Chem.	2	(2)	4
Eng. 01, Gram. and Rhetoric	4		4
Math. 01, Arith. and Algebra	4		4
A. H. 01, Stock Judging		(2)	2
F. M. 01, Drawing		(2)	2
Hyg. 01, Personal Hygiene	1		1
	13	8	21

Second Semester

Bot. 02, Plant Classification	2	(2)	4
Chem. 02, Chemical Analysis	2	(2)	4
Eng. 02, Agric. Literature	4		4
Math. 02, Algebra and Geom.	4		4
A. H. 02, Stock Judging		(2)	2
F. M. 02, Carpentry		(2)	2
Hyg. 02, First Aid	1		1
	13	8	21

HORTICULTURE GROUP

SECOND YEAR

First Semester

Math. 03, Applied Math.	3		3
F. M. 03, Bldg. Construction		(2)	2
Agr. 01, Soils	2	(1)	3
Hort. 01, Plant Propagation and Fruit Growing	2	(2)	4
Entomol. 01, Insect Pests	2	(2)	4
	9	7	16

Second Semester

Math. 04, Physics and Trig.	3		3
F. M. 04, Forging		(2)	2
Agr. 02, Farm Crops	2	(1)	3
Hort. 02, Deciduous and Small Fruits	2	(2)	4
P. P. 02, Plant Diseases	2	(2)	4
Chem. 04, Agric. Chemistry	2		2
	11	7	18

Electives

First Semester				*Second Semester*			
P. H. 01, Breeds and Housing	2	(1)	3	P. H. 02, Care and Feeding	2	(1)	3
E. and H. 03, Eng. elective	3		3	E. and H. 04, Eng. elective	3		3
E. and H. 07, Hist. elective	3		3	E. and H. 08, Hist. elective	3		3
E. and H. 011, Civics	3		3	E. and H. 012, Economics	9		3
I. and S. 01, Surv. and Irrig.	2	(2)	4	I. and S. 02, Irrig. Practice	1	(2)	3
Agr. 03, Farm Management	2	(1)	3	F. M. 06, Farm Machinery	2	(2)	4
Hort. 03, Fruit Handling	2	(1)	3	Hort. 04, Vegetable Gardening			
Hort. 05, Viticul. principles	2	(1)	3	E. and H. 010, Hist. elective	3		3
				or Hort. 08	2	(2)	4
	11	6	17	Hort. 06, Viticulture Practice			
				or Hort. 08	2	(1)	3
					10	7	17

Third Year

E. and H. 05, Eng. elective	3		3	Hort. 08, Citrus and Semi-tropical Fruits	2	(1)	3
E. and H. 09, Hist. elective	3		3	E. and H. 06, Eng. elective	3		3
				E. and H. 010, Hist. elective	3		3

ANIMAL HUSBANDRY GROUP

Second Year

First Semester				*Second Semester*			
Math. 03, Applied Math.	3		3	Math. 04, Physics and Trig.	3		3
F. M. 03, Bldg. Construction		(2)	2	F. M. 04, Forging		(2)	2
Agr. 01, Soils	2	(1)	3	Agr. 02, Farm Crops	2	(1)	3
D. I. 01, Elem'ts of Dairying	3	(1)	4	D. I. 02, Dairy Practice	3	(1)	4
P. H. 01, Breeds and Housing	2	(1)	3	P. H. 02, Care and Feeding	2	(1)	3
A. H. 03, Breeds and Judging	2	(2)	4	A. H. 04, Breeds and Judging	2	(2)	4
				Chem. 04, Agric. Chemistry	2		2
	12	7	19		14	7	21

Electives

Hort. 01, Plant Propagation Fruit Growing	2	(2)	4	Hort. 02, Deciduous and Small Fruits	2	(2)	4
Hort. 03, Fruit Handling	2	(2)	4	Hort. 04, Vegetable Gardening or Hort. 08	2	(2)	4
E. and H. 03, Eng. elective	3		3	E. and H. 04, Eng. elective	3		3
E. and H. 07, Hist. elective	3		3	E. and H. 08, Hist. elective	3		3

Third Year

First Semester				*Second Semester*			
E. and H. 011, Civics	3		3	E. and H. 012, Economics	3		3
I. and S. 01, Surv. and Irrig.	2	(2)	4	I. and S. 02, Irrig. Practice	1	(2)	3
Agr. 03, Farm Management	2	(1)	3	F. M. 06, Farm Machinery	2	(2)	4
D. I. 03, Market Milk	1	(1)	2	A. H. 06, Feeding Practices	2		2
A. H. 05, Feeding Principles	2		2	V. S. 02, Veterinary Science	1	(2)	3
A. H. 09, Stock Management	1	(2)	3		9	6	15
	11	6	17				

Electives

P. H. 03, Fancy Judging		(2)	2	D. I. 04, Dairy Manufactures	1	(1)	2
A. H. 07, Milk Production	2		2	P. H. 04, Incb. and Brooding		(2)	2
E. and H. 05, Eng. elective	3		3	E. and H. 06, Eng. elective	3		3
E. and H. 09, Hist. elective	3		3	E. and H. 010, Hist. elective	3		3

SHORT COURSES

The purpose of the Short Courses in Agriculture at the University Farm School is to afford opportunity for those particularly of mature years and ranch experience who for lack of time, preparation or means cannot take a longer course to acquire some knowledge of the application of science and the results of the latest investigations to practical ranch work in the production of fruits, grains and livestock of various classes. The rapidity with which the science of agriculture has developed and the many ways in which ranch losses may be reduced and profits increased make it highly desirable for the up-to-date rancher to add to practical experience the fruits of the latest research. Not the least of the benefits of these Short Courses is the contact which the student has with other progressive men—leaders in their community—who have left their business for a short time to acquire that which may be of immediate use to them.

Six definite courses of study are offered. Each is distinct in itself and is planned to occupy all of the student's time. Upon the completion of one course, the student may take one of these courses immediately following it. The student's time is divided between class room, laboratory and field practice. The student may find it profitable to come back a second year rather than to spread his time over too wide a variety of subjects. Instruction in the Short Courses will be in charge of the regular corps of instructors of the College of Agriculture. While a four years' university course cannot be crowded into four to eight weeks, the purpose of the course is to afford that kind of training and instruction which shall be of immediate commercial value to the rancher.

The *six short courses* offered during the fall of 1914 are:

General Agriculture—Four weeks, October 6–October 30, 1914.
Horticulture and Viticulture—Four weeks, October 6–October 30, 1914.
Poultry Husbandry—Six weeks, October 6–November 13. 1914.
Dairy Manufactures—Eight weeks, October 6–November 27, 1914.
Dairy Production—Two weeks, November 2–November 13, 1914.
Live Stock Production—Two weeks, November 2–November 13, 1914.

SHORT COURSE SUBJECTS

The following subjects are offered in one or more of the six courses mentioned above. The time given to each is divided between lecture, laboratory, and field work, with the view of giving the student the largest amount of useful instruction in the time available for the subject.

SHORT COURSE SUBJECTS

Animal Husbandry.—Lectures on the market types and breeds of bee cattle, hogs, sheep, and horses; feeding, breeding and handling same; a study of the breed characteristics of the different animals; practice work in judging the various types of farm animals.

Citrus Fruits.—This course is designed to cover both the planting and general care of citrus orchards. Considerable time will be devoted to the matter of field practices including such items as cultural methods, cover crops, irrigation, fertilizers and the control of insects and diseases.

Dairy Bacteriology.—Study of the bacterial contamination of milk b air, water, utensils, etc.; significance and control of fermentation in milk; bacteriology of butter-making and cheese-making.

Dairy Cattle.—Lectures upon the breeds of dairy cattle; their selection, feeding, management and breeding.

Dairy Cattle Judging.—Practice in judging and selecting dairy cattle.

Dairy Manufactures.—Lectures upon the secretion, composition and handling of milk; the operation of the Babcock test and other commercial tests; lectures and practice on separation, pasteurization and ripening of cream; production and use of starters; churning and moisture control in butter; manufacture of California and cheddar types of cheese; scoring of dairy products; icecream making; creamery accounting; creamery management; dairy mechanics, including engines, boilers, motors, pumps, and refrigeration.

Deciduous Fruits.—Propagation, culture, pruning, spraying and care of deciduous fruit trees. Practice in University Farm orchards.

Farm Management.—A study of the adaptation of a farm to certain crops and types of farming; the planning of crops with reference to the maintenance of soil fertility; location of buildings; keeping of records; co-operation in marketing; different forms of land tenure.

Farm Mechanics.—A study of the farm implements and machinery which are applicable to California agriculture; practice work in handling gas engines and power machines; proper care, adjustment and use of farm equipment; factors concerned in the construction of farm buildings.

Every farmer should have a germination test made of his seed before planting it.

Field Crops. — Lectures covering the fundamental principles of the successful growing of grain; conservation of soil fertility in such land; crop rotation; dry land farming; practice work in the selection of seed; judging of grains.

Since the production of all classes of live stock is intimately associated with the growing of feed for them, the live stock or dairy production course should, if possible, be preceded by the general agricultural course dealing, as it does, with the tillage of the soil and growing of all classes of crops.

Work begins at 11 a.m. on the date of opening. Students should arrive long enough before this to receive rooms and register.

Admission.—There are no entrance examinations and no restrictions as to sex, but applicants must be at least eighteen years of age.

Expenses.—Board may be secured at the dining hall on the University Farm for $5 per week; rooms at the dormitories for from $6 to $10 per month. Similar prices prevail in the town of Davis.

Books and Special Clothing.—Dairy students are required to wear white suits, which may be purchased in Davis at $1 per suit or brought from home. Other students will find it desirable to have overalls for working around stock and machinery. Books and other necessary supplies may be purchased in Davis.

Fees and Deposits.—A registration fee of $2 is charged each student. In the courses which include milk testing a deposit of $3 for breakage is also charged, but such portion as is not needed to pay for breakage will be returned. The full fee and deposit for each course are to be paid whether the participant is present the whole or only part of the course.

Railroad Rates.—Attendants upon the short courses may secure a round trip rate of one and one-third lowest first-class fare on the receipt certificate plan from all stations on the Santa Fe and Southern Pacific and Western Pacific railroads in California, including Reno, Nevada. Stopover privileges may be secured on the going trip if the agent at initial point is asked for ticket allowing such privileges and by paying the regular stop-over fare. No stopovers are allowed on the return trip. In all cases ask for receipt-certificate when purchasing ticket to Davis.

CALENDAR

1914	
Jan. 5, Monday	Applications for admission in January and applications for cards of admission to the matriculation examinations in January to be filed.
Jan. 5, Monday	Registration of students in the College of Medicine for courses of the second half-year.
Jan. 6, Tuesday Jan. 10, Saturday	Examinations in the Academic Colleges for the removal of matriculation deficiencies.
Jan. 12, Monday	Registration of students in the Academic Colleges for courses of the second half-year.
Jan. 13, Tuesday	Instruction in all classes begins at 8 a.m.
March 23, Monday	Charter Day; exercises in the Greek Theatre or Harmon Gymnasium.
April 27, Monday May 9, Saturday	Annual examinations in the Academic Colleges; annual examinations for seniors begin Thursday, April 23.
May 11, Monday	Class Day.
May 13, Wednesday	The Fifty-first Commencement.
May 14, Thursday Aug. 5, Wednesday	Vacation of twelve weeks in the Academic Colleges, Hastings College of the Law, and the College of Medicine.
June 22, Monday Aug. 1, Saturday	Summer Session of the Academic Colleges.
Aug. 3, Monday	Applications for admission, and credentials of the recommended graduates of accredited high schools to be filed with the Recorder of the Faculties.
Aug. 6, Thursday Aug. 11, Tuesday	Matriculation examinations at Berkeley for the Academic Colleges, the California College of Pharmacy, and Hastings College of the Law; filing of applications for admission to advanced and graduate standing and to special status.
Aug. 14, Friday Aug. 15, Saturday Aug. 17, Monday	All officers of instruction in the colleges at Berkeley keep office hours each day from 9 a.m. to 12 m.
Aug. 14, Friday Aug. 15, Saturday	Admission certificates issued to intrants; resignation of new students, graduate and undergraduate, from 8:30 a.m. to 4:30 p.m., in California Hall.
Aug. 17, Monday	Registration of old students, graduate and undergraduate, 8:30 a.m. to 5 p.m., in California Hall.
Aug. 18, Tuesday	Instruction in all classes begins at 8:07 a.m.
Nov. 26, Thursday Nov. 28, Saturday	Thanksgiving recess of three days.
Dec. 9, Wednesday Dec. 19, Saturday	Mid-year Examinations in the Academic Colleges.
Dec. 20, Sunday Jan. 3, Saturday	Christmas vacation in the Academic Colleges, Hastings College of the Law, the College of Medicine, the College of Dentistry, and the California College of Pharmacy.
1915	
Jan. 2, Saturday	Applications for admission in January and applications for cards of admission to the matriculation examinations in January to be filed.
Jan. 4, Monday	Second half-year in the Academic Colleges and in Hastings College of the Law begins.
Jan. 4, Monday	Registration of students in the College of Medicine for courses of the second half-year.
Jan. 5, Tuesday Jan. 9, Saturday	Examinations in the Academic Colleges for the removal of matriculation deficiencies.

Jan. 11, Monday	Registration of students in the Academic Colleges for courses of the second half-year.
Jan. 12, Tuesday	Instruction in all classes begins at 8:07 a.m.
Jan. 12, Tuesday	Instruction in all classes begins at 8:07 a.m.
Feb. 11, Thursday	Final schedules of graduate students who are candidates for higher degrees to be conferred in May to be filed with the Recorder; advancement to candidacy must have taken place, by formal petition, before this date.
Feb. 11, Thursday	Theses of candidates for Ph.D. to be conferred in May to be filed with the Recorder, for the Academic Council.
Mar. 17, Wednesday	Last day for applications for graduate scholarships for 1915-16.
Mar. 23, Tuesday	Charter Day; exercises in the Greek Theatre or Harmon Gymnasium.
April 1, Thursday	Last day for applications for undergraduate scholarships for 1915-16.
April 26, Monday May 8, Saturday	Annual examinations in the Academic Colleges; annual examinations for seniors begin Thursday, April 22.
April 29, Thursday	Candidates for Ph.D. file with the Recorder written report of work performed during the year.
May 10, Monday	Class Day.
May 12, Wednesday	The Fifty-second Commencement.
May 13, Thursday Aug. 4, Wednesday	Vacation of twelve weeks in the Academic Colleges, Hastings College of the Law, and the College of Medicine.
June 21, Monday July 31, Saturday	Summer Session of the Academic Colleges.
Aug. 2, Monday	Applications for admission and credentials of the recommended graduates of accredited high schools to be filed with the Recorder of the Faculties.
Aug. 5, Thursday Aug. 10, Tuesday	Matriculation examinations at Berkeley for the Academic Colleges, the California College of Pharmacy, and Hastings College of the Law; filing of applications for admission to advanced and graduate standing and to special status.
Aug. 13, Friday Aug. 14, Saturday Aug. 16, Monday	All officers of instruction in the colleges at Berkeley keep office hours each day, from 9 a.m. to 12 m.
Aug. 13, Friday Aug. 14, Saturday	Admission certificates issued to intrants; registration of new students, graduate and undergraduate, from 8:30 a.m. to 4:30 p.m., in California Hall.
Aug. 16, Monday	Registration of old students, graduate and undergraduate, 8:30 a.m. to 5 p.m., in California Hall.
Aug. 17, Tuesday	Instruction in all classes begins at 8:07 a.m.

UNIVERSITY OF CALIFORNIA BULLETINS

A series in the administrative bulletins of the University of California, issued monthly from July to March, and twice a month from April to June. These bulletins include: The Circular of Information, Colleges of Letters, Sciences, and Engineering; the Annual Announcement of the Summer Session; the Annual Announcement of the Colleges of Dentistry, Law, Medicine, and Pharmacy; the President's Annual Report.

UNIVERSITY OF CALIFORNIA BULLETIN

A SERIES IN THE ADMINISTRATIVE BULLETINS
OF THE UNIVERSITY OF CALIFORNIA

Entered July 1, 1911, at the Post Office at Berkeley, California,
as second-class matter, under the Act of Congress
of July 16, 1894

Issued monthly from July to March, and twice a month from
April to June

These Bulletins include:

The Circular of Information, Colleges of Letters, Sciences, and Engineering.

The Annual Announcement of the Summer Session.

The Annual Announcement of the Colleges of Dentistry, Law, Medicine, and Pharmacy.

The President's Annual Report.

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1915-16

University of California Bulletin

THIRD SERIES. Vol. VIII, No. 15

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PROSPECTUS

OF THE

COLLEGE OF AGRICULTURE

1915-1916

JUNE, 1915

PUBLISHED BY THE
UNIVERSITY OF CALIFORNIA
BERKELEY

Administrative Bulletins of the University of California

1915-16. No. 20

ORGANIZATION OF THE UNIVERSITY

The University of California is an integral part of the public educational system of the State. As such it completes the work begun in the public schools. Through aid from the State and the United States, and by private gifts, it furnishes instruction in literature and in science, and in the professions of engineering, art, law, medicine, dentistry, and pharmacy. In the Colleges of Letters and Science, Commerce, Agriculture, and Engineering these privileges are offered without charge for tuition, to all residents of California who are qualified for admission. Non-residents of California are charged a tuition fee of ten dollars each half-year. In the professional colleges, except that of Law, tuition fees are charged. The instruction in all the colleges is open to all qualified persons, without distinction of sex. The Constitution of the State provides for the perpetuation of the University, with all its departments.

Letters of inquiry concerning the College of Agriculture should be addressed to the *Dean of the College of Agriculture, Berkeley, California.*

For the following circulars of information concerning the several colleges and departments of the University apply to the *Recorder of the Faculties, University of California, Berkeley, California.*

1. The Circular of Information, Academic Departments (College of Letters and Science and Engineering, and the first two years of Medicine). Containing general information about the the University, its organization, government, faculties, requirements for admission both to graduate and undergraduate status, requirements for degrees and teachers' recommendations, expenses.

2. The Annual Announcement of Courses of Instruction in the Academic Colleges. Published annually in July. Price 10 cents. Sent by mail by the Recorder of the Faculties for 15 cents.

3. The Announcement of the Summer Session in the Academic Colleges, published annually in March. Sent free.

UNIVERSITY OF CALIFORNIA

PROSPECTUS
OF THE
COLLEGE OF AGRICULTURE

1915-1916

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY
1915

The upper group of young men, 129, in front of Agriculture Hall, Berkeley, represents the increase in University students in the College of Agriculture during two years. The enrollment in 1912–13 was 490; in 1914–15, it was 619.

The lower group, 132, in front of the Class Room Building, Davis, represents the increase in University Farm School students during two years. The enrollment in 1912–13 was 157; in 1914–15, it was 289.

AGRICULTURAL STAFF

Benjamin Ide Wheeler, Ph.D., LL.D., President of the University of California.
Thomas Forsyth Hunt, D.Agr., D.Sc., Dean of the College of Agriculture; Professor of Agriculture; Director of the Agricultural Experiment Station.
Frank Adams, M.A., Irrigation Practice.
R. L. Adams, M.S., Assistant Professor of Agronomy.
W. H. Arnold, B.S., Instructor in Chemistry, Davis.
H. J. Baade, B.S., Assistant in Agricultural Extension, Napa.
E. B. Babcock, M.S., Professor of Genetics.
L. E. Bailey, B.S., Assistant in Soil Chemistry.
H. S. Baird, B.S., Instructor in Dairy Industry, Davis.
G. Barovetto, Field Assistant in Viticulture, Davis.
J. T. Barrett, Ph.D., Professor of Plant Pathology, Riverside.
L. D. Batchelor, Ph.D., Associate Professor of Plant Breeding, Riverside.
W. E. Bates, M.D., Lecturer in Hygiene, Davis.
J. R. Beach, D.V.M., Assistant in Veterinary Science.
S. H. Beckett, B.S., Assistant Professor of Irrigation Practice, Davis.
H. L. Belton, Instructor in Shopwork, Davis.
H. E. Billings, M.S., Assistant in Agricultural Chemistry.
F. T. Bioletti, M.S., Professor of Viticulture and Enology.
L. Bonnet, I.A., Instructor in Viticulture.
Donald Bruce, B.A., M.F., Assistant Professor of Forestry.
V. C. Bryant, M.S., Instructor in Agricultural Extension.
Mrs. D. L. Bunnell, Librarian.
J. S. Burd, B.S., Professor of Agricultural Chemistry.
Chas. Burge, B.S., Assistant in Animal Husbandry.
H. M. Butterfield, B.S., Assistant in Agricultural Education.
D. H. Carey, B.S., Instructor in Floriculture; Superintendent of Greenhouses and Gardens.
A. H. Christiansen, B.S., Instructor in Agricultural Extension, Eureka.
Miss Lillian D. Clark, Instructor in Agricultural Extension.
W. T. Clarke, B.S., Professor of Agricultural Extension and Superintendent of Farmers' Institutes.
C. P. Clausen, B.S., Assistant in Entomology, Riverside.
R. E. Clausen, Ph.D., Instructor in Genetics.
J. E. Coit, Ph.D., Professor of Citriculture.
G. A. Coleman, Instructor in Entomology and Curator of the Agricultural Museum.
I. J. Condit, B.S., Assistant Professor of Citriculture.
B. H. Crocheron, M.S.A., Assistant Professor of Agricultural Extension.
W. V. Cruess, B.S., Assistant Professor of Zymology.
J. B. Davidson, M.E., Professor of Agricultural Engineering.
Miss J. E. Davis, M.A., Instructor in Nutrition.
L. M. Davis, B.S., Assistant Professor of Dairy Industry.
J. A. Denny, Foreman in Cereal Work, Davis.
V. F. Dolcini, B.S., Assistant in Animal Husbandry, Davis.
W. H. Dore, B.S., Assistant Chemist in Fertilizer Control.
J. E. Dougherty, B.S., Associate Professor of Poultry Husbandry, Davis.
H. H. Douglass, M.S., Instructor in Dairy Industry, Davis.
C. F. Elwood, B.S., Instructor in Agricultural Education.
E. O. Essig, M.S., Instructor in Entomology.
H. S. Fawcett, M.S., Associate Professor of Plant Pathology, Riverside.
F. C. H. Flossfeder, Instructor in Viticulture and Superintendent of Grounds, University Farm, Davis.

S. B. Freeborn, B.S., Instructor in Entomology.
H. B. Frost, M.S., Assistant in the Citrus Experiment Station, Riverside.
W. F. Gericke, B.S., Instructor in Soil Chemistry.
J. W. Gilmore, M.S.A., Professor of Agronomy.
G. P. Gray, M.S., Instructor in Insecticides and Chemist in Insecticide Laboratory.
J. W. Gregg, B.S., Professor of Landscape Gardening and Floriculture.
J. E. Guernsey, M.S., Assistant in Soil Technology.
H. M. Hall, Ph.D., Assistant Botanist.
C. M. Haring, D.V.M., Professor of Veterinary Science.
R. F. Havens, B.S., Assistant in Poultry Husbandry.
F. M. Hayes, D.V.M., Assistant Professor of Veterinary Science.
W. H. Heilemann, M.S., Assistant in Agricultural Extension, Glenn County.
A. H. Hendrickson, B.S., Instructor in Pomology.
G. W. Hendry, B.S., Instructor in Agronomy.
W. B. Herms, M.A., Associate Professor of Parasitology.
P. L. Hibbard, B.S., Chemist in Fertilizer Control.
E. W. Hilgard, Ph.D., LL.D., Professor of Agriculture (Emeritus).
Miss Cora J. Hill, B.L., Assistant in Dairy Testing.
F. E. Hill, Foreman, Forestry Station, Santa Monica.
D. R. Hoagland, M.S., Assistant Professor of Agricultural Chemistry.
W. T. Horne, B.Sc., Associate Professor of Plant Pathology.
W. L. Howard, Ph.D., Associate Professor of Pomology, Davis.
W. G. Hummel, M.S., Associate Professor of Agricultural Education.
Thomas Francis Hunt, B.S., Assistant Professor of Agricultural Extension; Assistant Superintendent of Farmers' Institutes.
R. C. Ingrim, Instructor in Shopwork, Davis.
O. W. Israelsen, M.S., Instructor in Experimental Irrigation, Davis.
J. Jacobsen, Foreman of Repairs, Davis.
M. E. Jaffa, M.S., Professor of Nutrition.
Miss Katherine Jones, B.S., Assistant in Landscape Gardening.
T. R. Kelley, A.B., Instructor in English and Economics, Davis.
W. P. Kelley, Ph.D., Professor of Agricultural Chemistry, Riverside.
P. B. Kennedy, Ph.D., Assistant Professor of Agronomy.
O. J. Kern, Assistant Professor of Agricultural Education.
M. A. Klein, Ph.D., Instructor in Soil Chemistry and Bacteriology.
Jas. Koeber, M.S., Instructor in Farm Mechanics, Davis.
E. J. Lea, M.S., Associate Professor of Nutrition.
C. B. Lipman, Ph.D., Professor of Soil Chemistry and Bacteriology.
W. E. Lloyd, B.S., Assistant in Poultry Husbandry, Davis.
R. H. Loughridge, Ph.D., Professor of Agricultural Chemistry (Emeritus).
Miss Anna M. Lute, A.B., Scientific Assistant, U. S. Department of Agriculture (in co-operation).
F. F. Lyons, B.S., Instructor in Agricultural Extension, Stockton.
R. R. Mack, B.S., Assistant in Agricultural Extension, Bakersfield.
B. A. Madson, B.S.A., Assistant Professor of Agronomy.
L. K. Marshall, Assistant in Agronomy, Kearney Park.
D. T. Mason, M.S., M.F., Professor of Forestry.
W. C. Matthews, A.B., Instructor in Scientific Illustration.
F. M. Marquis, D.V.M., Assistant in Veterinary Science.
Miss Margaret Mayberry, Librarian, Davis.
H. A. Mattill, Ph.D., Assistant Professor of Nutrition.
T. C. Mayhew, B.S., Assistant in Agricultural Extension, Madera.
Elwood Mead, D.E., Professor of Rural Institutions.
Woodbridge Metcalf, A.B., M.S., Assistant Professor of Forestry.
W. M. Mertz, Superintendent of Cultivations, Riverside.
M. R. Miller, B.S., Assistant Chemist in Insecticide Control.

R. F. Miller, M.S., Assistant Professor of Animal Husbandry, Davis.
James Mills, Assistant in Agricultural Extension, Fairfield.
J. N. Moore, Foreman, Forestry Station, Chico.
Mrs. Agnes F. Morgan, Ph.D., Assistant Professor of Nutrition.
D. N. Morgan, B.S., Assistant Professor of Agriculture; Assistant to the Director.
Walter Mulford, B.S.A., F.E., Professor of Forestry.
J. W. Nelson, B.S., Assistant Professor of Soil Technology.
L. J. Nickels, B.S., Instructor in Insect Industries, Davis.
W. H. Nixon, B.S., Assistant in Agricultural Extension, Hayward.
W. F. Oglesby, A.B., Assistant in Viticulture.
W. E. Packard, M.S., Assistant Professor of Agronomy, Imperial Valley Station, El Centro.
W. B. Parker, M.S., Assistant in Agricultural Extension, Ventura.
R. L. Pendleton, B.S., Assistant in Soil Survey.
M. B. Pratt, B.S., M.F., Assistant Professor of Forestry.
H. J. Quayle, M.S., Professor of Entomology, Riverside.
H. S. Reed, Ph.D., Professor of Plant Physiology, Riverside.
C. L. Roadhouse, D.V.M., Associate Professor of Veterinary Science.
J. T. Rodgers, Farm Foreman.
S. S. Rogers, B.S., Assistant Professor of Olericulture, Davis.
Richard Schmidt, Orchardist at the University Farm, Davis.
N. P. Searls, B.S., Instructor in Agricultural Extension, Woodland.
W. A. Setchell, Ph.D., Botanist.
L. T. Sharp, B.S., Assistant Professor of Soil Chemistry and Bacteriology.
C. F. Shaw, B.S., Professor of Soil Technology.
Alfred Smith, M.A., Instructor in Soil Technology.
C. O. Smith, M.S., Instructor in Plant Pathology, Whittier.
Miss E. H. Smith, M.S., Assistant Professor of Plant Pathology.
R. E. Smith, B.S., Professor of Plant Pathology.
R. T. Stevens, B.S., Assistant Professor of Landscape Gardening.
G. R. Stewart, B.S., Assistant Professor of Agricultural Chemistry.
Miss M. E. Stover, B.S., Instructor in Nutrition.
A. V. Stubenrauch, M.S., Professor of Pomology.
T. F. Tavernetti, B.S., Assistant to Dean of the University Farm School, Davis.
R. H. Taylor, B.S., Assistant Professor of Pomology.
W. J. Taylor, D.V.M., Assistant Professor of Veterinary Science, El Centro.
E. E. Thomas, B.S., Assistant Chemist, Whittier.
J. I. Thompson, B.S., Assistant Professor of Animal Husbandry, Davis.
C. M. Titus, M.A., Instructor in Mathematics, Davis.
G. H. True, B.S., Professor of Animal Husbandry.
Jacob Traum, D.V.M., Assistant Professor of Veterinary Science.
R. S. Vaile, B.A., Assistant Professor of Orchard Management, Riverside.
E. P. Van Duzee, Instructor in Entomology.
E. C. Van Dyke, B.S., M.D., Assistant Professor of Entomology.
H. E. Van Norman, B.S., Dean of the University Farm School, Davis; Vice-Director of the Agricultural Experiment Station; Professor of Dairy Management.
E. C. Voorhies, B.S., Instructor in Animal Husbandry, Davis.
A. E. Way, Field Assistant in Viticulture, Fresno.
H. J. Webber, Ph.D., Director Citrus Experiment Station, Riverside; Dean of the Graduate School of Tropical Agriculture; Professor of Plant Breeding.
H. A. Weinland, B.S., Assistant in Agricultural Extension, San Diego.
E. J. Wickson, M.A., Professor of Horticulture (Emeritus).
C. J. Wight, B.S., Instructor in Botany, Davis.
F. W. Woll, Ph.D., Professor of Animal Nutrition.
C. W. Woodworth, M.S., Professor of Entomology.
H. D. Young, B.S., Assistant in Agricultural Chemistry, Whittier.
C. J. Zinn, Assistant in Soil Technology.

ACTIVITIES

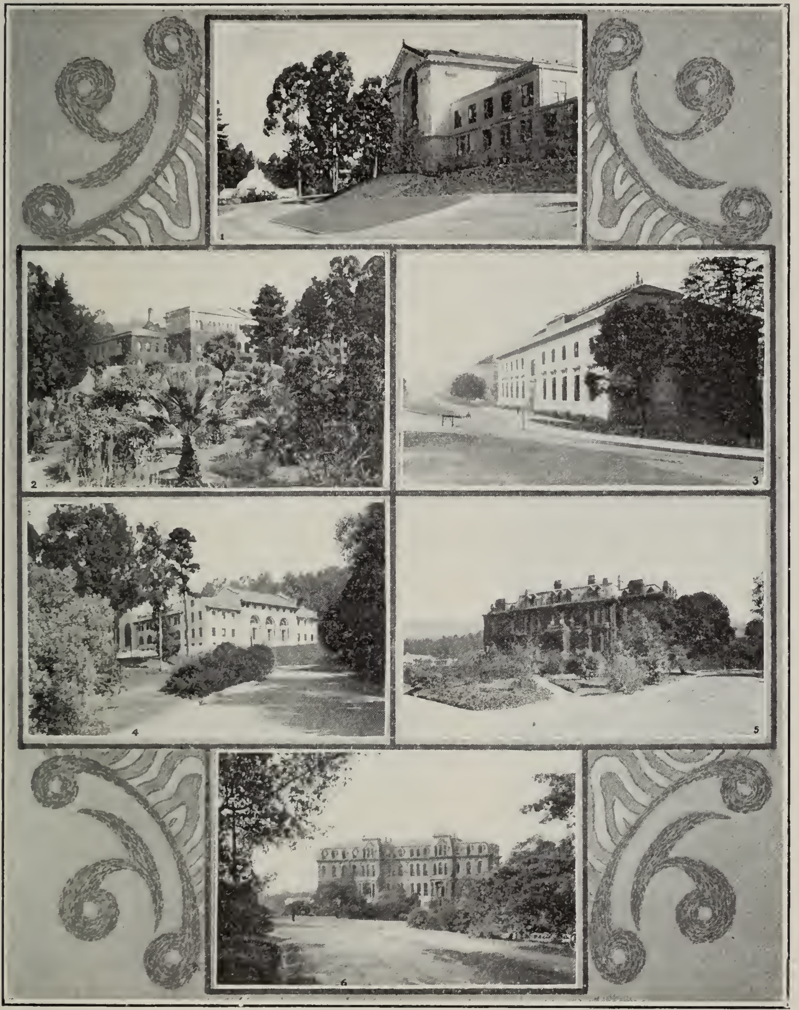
The College of Agriculture has three phases: research, education, and public welfare.

It meets these responsibilities through more or less definitely organized activities, as follows:

1. *University instruction* to students who are candidates for the degree of Bachelor of Science in the College of Agriculture. The largest possible freedom of election is permitted during the junior and senior years. For admission see page 19.
2. *University Farm School instruction* to students who have reached the age of 18 years. Applicants under 18 years of age may be admitted if they are graduates of a high school of recognized standing. Other applicants are required to pass entrance examinations in English composition and arithmetic.
3. *Short courses for practical farmers.* These are given at the University Farm during October and November. They are open to any person over 18 years of age without examination.
4. *University extension in agriculture,* including *Farmers' Institutes.* Applications for farmers' institutes should be addressed to the Professor of Agricultural Extension, University of California, Berkeley.
5. *Research.* Certain funds received from the Federal government can be used only for experimental work. State funds are also used for this work. Results of these investigations are published in bulletins and circulars, which are sent free upon request.
6. *Graduate work.* Opportunities of an unusual character are offered by reason of the large number of research laboratories. A special department of graduate work in tropical agriculture has been organized. A complete announcement of the Graduate School will be sent free to university and college graduates.

UNIVERSITY INSTRUCTION

Students entering the courses in agriculture leading to the degree of Bachelor of Science are required before their junior year to complete Agricultural Chemistry, Soils, Plant Propagation and Genetics, together with the sciences underlying these courses, as Chemistry, Botany, Bacteriology, Zoology and Geology, and to complete a Summer Practice Course of six weeks. They are also required to complete certain courses in English, mathematics, foreign language, history or economics, mechanical drawing, and surveying. During the junior and senior years they are



1. Library.

2. Mechanical Engineering.

3. California and Boalt Halls.

4. Hearst Memorial Mining Building.

5. South Hall.

6. North Hall.

The University campus has long been famous for its natural beauty.

required to pursue courses in one or more of the following fields of study: Agricultural Chemistry, Agricultural Education, Agronomy, Animal Husbandry, Citriculture, Dairy Industry, Entomology, Forestry, Irrigation, Landscape Gardening and Floriculture, Nutrition, Parasitology, Plant Pathology, Pomology, Poultry, Soils and Fertilizers, and Viticulture and Enology. The student is free to elect at least one-third of his studies during his junior and senior years from any of the courses offered in the University in which he is qualified by previous preparation to enter.

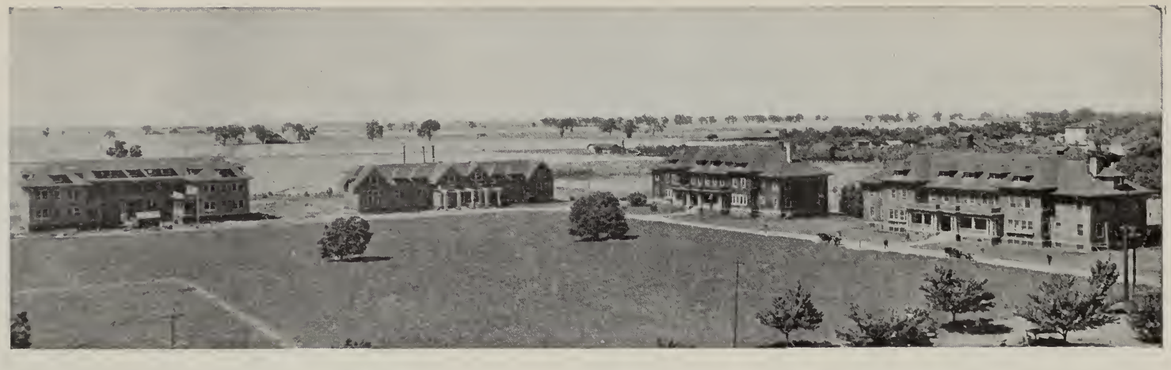
The freshman and sophomore years must be spent at the University in Berkeley, but one or more semesters of the junior or senior years may be taken at the University Farm at Davis or elsewhere. Only students who have graduated from an accredited high school or its equivalent can enter these courses. Prospective students are advised to consult with their high school principal concerning the requirements for entrance and to apply to the Recorder of the Faculties, University of California, Berkeley, for proper blanks for submitting the record of their high school work. The number of students, undergraduate and graduate, in 1914–15 was 619.

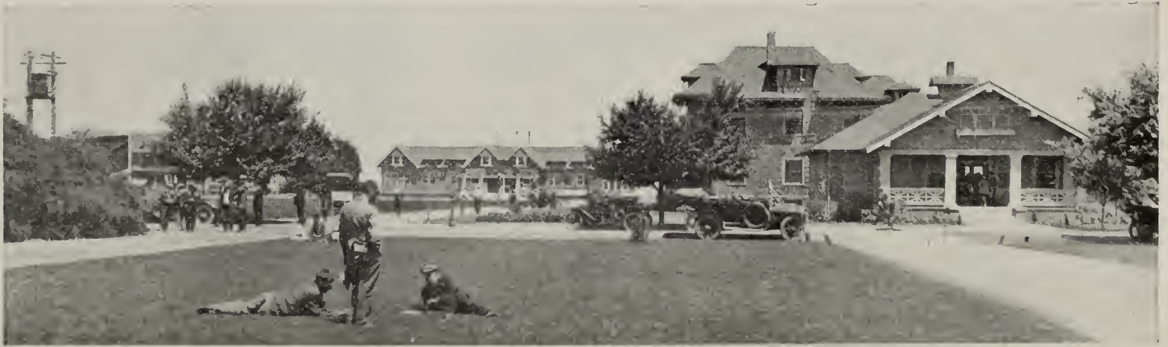
It is the aim first to educate students who spend four years or more in the College of Agriculture so as to make them a vital force in the progress of their respective communities; second, to create leaders in the dissemination of agricultural knowledge and competent investigators. The University courses in Agriculture give both the mental training that is indispensable to success and the scientific and technical training requisite for efficient work in practical farming, agricultural education, or research.

FARM SCHOOL INSTRUCTION

The University Farm School offers a three-year course in Agriculture so arranged that the student may specialize in either animal husbandry or horticulture. This course is planned to meet the needs of students who have reached the age of 18 without the requirements for admission to the four-year courses in agriculture offered by the University, or who may not wish to take the time to acquire so thorough a training in languages, mathematics, and underlying sciences as those courses necessitate.

The course gives students an understanding of the natural laws which govern plant and animal production and a knowledge of the best methods of agricultural practice. The first year is devoted largely to training in the fundamental sciences, particularly botany and chemistry, a knowledge of which is essential to intelligent study of the technical problems of agriculture. During the second and third years a study is made of all





At the University Farm there are dormitory accommodations for 291 persons, while the dining room is capable of seating 400 persons. Comparatively few rooms are available for short-course students, most of whom find rooms in the town of Davis, but there is ample provision for meals. In the upper picture the second building from the left is the Dining Hall, the other three are dormitories. In the lower picture the building on the right is the Dean's Office, where all students go to register.

the more important branches of agriculture which are followed in this state. A large proportion of the work is done in laboratory, field, and shop. Most of the time is given to technical subjects; but practical mathematics is studied throughout the course, while some work in English and economics is also included.

Every effort is made to meet the needs of high school graduates who desire two years of technical training in agriculture. It is intended to give them a thorough grasp of the principles which underlie the scientific and economic management of soils, crops, and animals.

The attendance upon the University Farm School during the year 1914–15 was 288. The average age of the intrants was twenty years and one month. One-half were graduates of high schools. High school students are advised to consult their principal, and those not attending high schools may consult the county superintendent of schools concerning the course of study. Applications for admission should be sent to the Dean of the University Farm School, Davis, California, so as to reach him, if possible, before September 1.

THE FARMERS' SHORT COURSES

An Act of the Legislature of 1905 provided for the purchase of a farm for the University of California, to be known as the University Farm and to be used by the College of Agriculture for purposes of experimentation and instruction in agriculture. In addition to other details, the Act provided that "short courses of instruction shall also be arranged for in each of the leading branches of agricultural industry, so regulated as to provide for popular attendance and general instruction in agricultural practice."

Conforming to this Act, and with funds appropriated by each succeeding Legislature, short courses have been given annually, beginning in the fall of 1908. The attendance and the expressions of hearty appreciation of the courses have been gratifying to the University and have indicated that the plans adopted meet with general approval.

Four Farmers' Short Courses are given at the University Farm, Davis, each year, beginning the first week in October. The courses in Agriculture, Horticulture, and Poultry Husbandry last six weeks, while the course in Dairy Manufactures continues for eight weeks. The attendance during 1914 was 186, distributed by courses as follows: Agriculture, 78; Dairy Manufactures, 30; Horticulture, 41; Poultry Husbandry, 37. Every rancher, stockman, or fruit raiser in California who can afford six weeks of time and sixty dollars of expense should take one of these courses. Every mature person who intends to engage in farming should look upon the time and expense as a first payment toward the capital invested in a farm. Many persons have been prevented from going astray by so doing.

The members of the Boys' Agricultural Clubs who completed the season's work were taken to Davis and Berkeley on a tour of inspection of the activities of the College of Agriculture. The illustration shows the combined clubs in the Greek Theatre at Berkeley at the time of the Students' Flower and Fruit Mart and the prize winner receiving an achievement badge at the hands of the President of the University of California.

The twelve farm advisers meet once each month with every farm bureau center, where local rural problems are discussed. Both men and women are members of the farm bureaus.

These courses are open without examination to any person 18 years of age or over. Twenty-seven was the average age of those attending last year. For the Announcement of Short Courses giving complete programme of lectures and practical exercises address Dean of the University Farm School, Davis, California.

AGRICULTURAL EXTENSION

The underlying principle of the work of this division is to carry to those not in attendance at the college the best results of the investigational efforts of the institution, to act as the connecting link between the college and the public at large. To accomplish these ends the following methods are used:

Farmers' Institutes

Meetings of farmers where topics of immediate interest are discussed and field demonstrations of methods of work advocated are given. For information concerning the organization of a Farmers' Institute address Division of Agricultural Extension, University of California, Berkeley.

Agricultural Betterment Clubs

Organizations in the rural districts for the close study of agricultural and home improvement subjects under the leadership of men and women from the College of Agriculture. This division has been instrumental in organizing fifteen such clubs.

Extension Schools

These are a logical outgrowth from the demand for more intensified courses of instruction. These schools are placed where the demand justifies such action, and at them those agricultural topics of present interest are fully studied under the direction of instructors from the College of Agriculture. The Extension School usually extends from six to ten days.

Personal Visitation and Correspondence

This division is prepared to visit individual properties for prospective settlers or for those already on the land, and to advise with the parties interested as to the agricultural possibilities of the land in question. Persons for whom this work is done are expected to meet the actual expenses involved. Advice concerning farm questions is also given by correspondence. In attending to individual inquiries and other correspondence about 75,000 letters are written annually.

County Farm Advisers.

Farm advisers have been established in twelve counties in co-operation with the United States Department of Agriculture. No farm adviser is installed until (*a*) a farm bureau is organized with at least one-fifth of the farmers in the county in its membership and (*b*) the Board of Supervisors appropriate $2000 per year for the expenses of the farm adviser. No funds for this work are accepted from any other source than from the county, state, and national governments. The farm adviser's work is organized through the county farm bureau. He travels about the county on schedule, completing the circuit of the farm bureau centers once a month, and visiting those farms to which he is called.

Boys' Agricultural Clubs

Agricultural clubs are established in sixty-five high schools of the state. The object of these clubs is to stimulate a greater interest in agriculture among high school boys and to spread a knowledge of better agricultural methods. The club members participate in a crop-growing contest each year, the winner being the boy who makes the largest profit, which is not necessarily the same as making the largest yield. Plots in the various clubs vary from one-tenth of an acre for onions to one acre for corn. The net profit ranged as high as the rate of $780 per acre in last year's contest. Thirty-seven clubs finished with six or more boys completing the contest, and, of these, twenty clubs locally raised the funds and sent their prize-winner, under the guidance of the University, on a transcontinental tour of 9000 miles, visiting twenty-four states, Canada and Mexico, stopping at twenty-four cities and seeing twelve of the most prominent types of farming in America. At the same time 147 other boys who had done good work in the clubs were sent by their home communities on a three-day trip to the University Farm and to Berkeley.

CORRESPONDENCE COURSES IN AGRICULTURE

Among those who will find these courses fitted to their needs are: busy farmers and their wives who wish to know more of the business of managing the farm and the house; persons interested in some special agricultural enterprise who wish to make a careful study of it; boys and girls on the farm who cannot attend an agricultural school or college; professional men, business men, mechanics, and others who wish to broaden their agricultural information or to gain information which will enable them to take up some special line of farming; and teachers of agriculture in rural and other public schools.

Each course deals with a special type of farming or a special topic of farm interest—as dairy husbandry, alfalfa culture, rural public health, and canning and preserving—with the purpose of giving in concise form the information needed by a person engaging in that particular kind of work. They are prepared with special reference to agricultural conditions in California and to the farming methods that apply in the various sections of the state.

At present thirty-six courses are offered: alfalfa culture, bean culture, corn culture, potato culture, onion culture, wheat culture, oat culture, barley culture, rice culture, dairy husbandry, swine husbandry, poultry husbandry, sheep husbandry, beef husbandry, bee-keeping, apple culture, pear culture, peach culture, plum culture, cherry culture, walnut culture, almond culture, grape growing, citrus fruits, olive growing, fig culture, home floriculture, home ground ornamentation, rural public health, canning and preserving, date culture, certain semi-tropical fruits, vegetable gardening, adult and child nutrition, infant and invalid nutrition, the farm home.

101. **Vegetable Gardening.** Assistant Professor Rogers.

General principles of vegetable gardening; detailed directions for the production and marketing of vegetables under California conditions, supplemented by practical work in the garden.

8 hrs.; 4 units; 2 lectures and 6 hrs. practicums, per week to be arranged.

Between September, 1913, when the agricultural correspondence courses were first offered, and March 15, 1915, 14,708 individual students enrolled for work. Of these students, 2537 have completed from one to eight courses.

How to Enroll.—Send to the College of Agriculture, Berkeley, California. for an application card and Circular 113, which lists and describes the agricultural correspondence courses now being offered. After looking over the circular and deciding which course you wish to take first, fill out and return the application card. The first two lessons of the course will then be sent to you, with questions on each lesson and instructions on how to proceed with the work.

RESEARCH

The Station looks back over an honorable record of thirty-seven years under the direction of Hilgard and Wickson, during which period a fundamental groundwork has been laid that it is believed will be enduring. Particular features of this basic work of the Station include the demonstration of distinctive characteristics of the soil of semi-arid climates as manifested in California, including unique discoveries of the operation of soil organisms; demonstration of the value and utilization of alkali lands through proper reclamation methods; also demonstrations bearing on the economical use of water and the development of better methods of the application of water in orchard and vineyard practice. In the field crops there has been demonstration of improved methods of culture, together with the production of improved varieties or select strains of cereals, which are a basis for building up vastly increased production.

It is the duty of the College of Agriculture through its Experiment Station to investigate the processes of plant and animal life, to discover the methods of control of diseases and insect enemies, to study the most economic methods of producing and marketing farm products, and to consider those rural institutions which will best promote both the wealth and welfare of the citizens of the state. More than two hundred experimental projects are under way. It is impossible here even to name the discoveries which have been made. Over two hundred and fifty thousand bulletins and circulars giving the results of these researches are distributed annually. Some of the recent publications treat of Vine Pruning, Humus in California Soils, The Intradermal Test for Tuberculosis, Utilization of Waste Oranges, Use of Anti-Hog-Cholera Serum, Spraying Walnut Trees, Grape Juice, Green Manuring, Use of Lime and Gypsum, The Duty of Water, Value of Kelp, Stock Poisoning Plants, Things the Prospective Settler Should Know, The Loquat, Fundamental Principles of Co-operation in Agriculture, Alfalfa Silage for Fattening Steers, Management of Strawberry Soils, The Avocado, The Foothill Regions, and the Depreciation of Lumber. These bulletins are sent free upon request to citizens of the state. Address Director, Agricultural Experiment Station, University of California, Berkeley, California.

CENTERS OF THE COLLEGE OF AGRICULTURE IN CALIFORNIA

To further the aims of the College of Agriculture there have been established certain important centers of activity in various portions of the state where the work of the College of Agriculture may be developed and from which it may ramify. These centers are at present as follows:

COLLEGE OF AGRICULTURE AND EXPERIMENT STATION AT BERKELEY

The headquarters for the activities of the College of Agriculture is the Campus of the University of California. Agriculture Hall houses, in addition to the Administrative and Extension offices, a portion of the work in horticulture, landscape gardening, entomology and plant pathology. Plans are under way for an additional unit to the agricultural group of buildings as provided for by the recent bond issue. This new unit will include the divisions of Agronomy, Citriculture, Forestry, Genetics, Pomology, Soil Technology, and Viticulture. Other buildings, such as Budd Hall, the Fertilizer Control Building, and the Insecticide Building, provide in part accommodations for the work of investigation and instruction in agricultural chemistry, agricultural education, soils, cereals, forage crops, nutrition, and animal diseases.

UNIVERSITY FARM

The University Farm conducts four rather distinct types of work.

1. It provides in part opportunities for the experimental work of the divisions of Agronomy, Animal Husbandry, Dairy Industry, Experimental Irrigation, Olericulture, Pomology, and Poultry Husbandry. It probably has the most complete collection of water-measuring devices in the world. Its experimental work in fields, orchards, vineyards, stables, and laboratories will well repay a day's time for visitors, who are always welcome.

2. Instruction to University students who may spend one or more semesters in study at the Farm.

3. Instruction to University Farm School students who may spend three years of eight months each.

4. Instruction each fall for six weeks, beginning the first week in October, for the special benefit of mature people who cannot give further time to resident study of agriculture.

CITRUS EXPERIMENT STATION

In 1907 experiments were begun with fertilizers applied to young orange and lemon trees. Experiments were begun, also, with cover-crops and with root stocks. Later provision was made for fundamental studies for the citrus industry and other problems arising wherever agriculture is conducted by irrigation. Thus far the investigations have been conducted chiefly on leased land at the base of Mount Roubidoux. Recently the Regents have acquired, in accordance with a provision of the State Legislature, 471 acres of land on the Box Springs road about three miles from the center of Riverside. New laboratories are to be built and extended field trials with oranges and other subtropical fruits will be conducted. One of the unique features of this station will be its graduate instruction in tropical agriculture.

Laboratory of the Citrus Experiment Station, Riverside. Oranges and lemons in foreground a part of eight acre fertilizer experiment begun in 1907.

The plant pathological laboratory at Whittier, Los Angeles County, in which research work which bears on the nature and control of plant diseases is carried on, is a part of the work of the Citrus Experiment Station.

IMPERIAL EXPERIMENT STATION

The Experiment Station at El Centro, Imperial County, comprises forty acres of land, on which experiments relating to the growing of trees, vines, cotton, and cereals, as well as other crops which may be suited to the Imperial Valley, are conducted. The Experiment Station is equipped with a laboratory, office and library, and out-buildings for farm stock and farm machinery.

KEARNEY PARK

The Kearney Estate, which was bequeathed to the University of California by M. Theodore Kearney, comprises 5400 acres of land, on which are situated extensive vineyards, orchards, and alfalfa ranches. A small portion of this ranch is used for experimental purposes, otherwise it is managed wholly as a commercial enterprise. It is a part of the future plan of the Board of Regents to make this estate contribute to the most extensive and varied instruction in agriculture, horticulture, and stock raising that has ever been attempted.

The successful combatting of several serious plant diseases has resulted from investigations carried on at the Whittier Laboratory.

CO-OPERATIVE EXPERIMENTS

In order to reach as large a portion of the state as possible in the experimental work of the College of Agriculture, the efforts of the latter are not confined to the numerous substations but also include experiments in co-operation with agriculturists and horticulturists in this state looking toward the solution of problems for more limited areas of California. Some of these are carried on by several divisions within the Department of Agriculture, and include short-term experiments which are frequently of great practical value.

UNIVERSITY COURSE IN THE COLLEGE OF AGRICULTURE

Admission Requirements

Any person, 16 years of age or over, may enter any of the colleges of the University of California as a regular student, without deficiency, if he is able to meet the following requirements:

	Units
English, 2 years	6
Mathematics, 4 years	12
Foreign language, 4 years	12
History, 1 year	3
Physics, 1 year	3
Chemistry, 1 year	3
Free-hand and Geometrical Drawing, 2 years	6
Total	45

However, no college requires all the subjects listed above, but each permits certain modifications in the requirements which enable students to elect other subjects in the high school, if they choose to do so. The student who desires to modify his high school course from the standard given above should confer with the principal of the high school or should write to the Recorder of the Faculties, Berkeley, California, for the Circular of Information, which gives a detailed statement of the admission requirements.

The minimum requirements for admission to the College of Agriculture in terms of high school work are:

	Units
English, 2 years	6
Mathematics, 2 years	6
Foreign language, 2 years	6
History, Physics, and Chemistry, each 1 year	9
Foreign language, Advanced English, Intermediate Mathematics, Advanced Mathematics, Drawing, third-or fourth-year science in any combination, 3 years	9
And 3 years of elective work	9
Total	45

A student who presents excessive matriculation credit of approved grade in any prescribed subject thereby reduces the amount of work required of him in that subject in the University, and earns the privilege of substituting elective courses in completing the 130 units of work required for graduation. This arrangement does not lessen the amount of work to be done, but it does give an opportunity to take more courses in agriculture than would otherwise be possible. It also makes possible broader preparation in natural sciences, foreign languages, and economics.

THE COURSES OF STUDY

The requirements for the Bachelor of Science degree in the College of Agriculture are four years of residence and 130 units of study. Ordinarily 64 units will be completed during the freshman and sophomore years, 6 units during the six weeks' summer practice course, and 60 units during the junior and senior years.

FRESHMAN AND SOPHOMORE YEARS

All students must register for the following:

Freshman Year

First Half-year	
Bot. 2. General Botany	3
Chem. 1A. Inorganic and Qualitative Analysis	5
Hyg. 1. General Hygiene	1
†Math. 1A. Trigonometry	3
Mil. 1A. Military Drill	½
Mil. 2A. Tactics	2
Phys. Ed. 1A. Gymnasium	1
Optional	2
	17½

Second Half-year	
Bot. 3. General Botany	3
Chem. 1B. Inorganic and Qualitative Analysis	5
†Drawing CD. Mechanical	2
Mil. 1B. Military Drill	1
Phys. Ed. 1B. Gymnasium	1
Path. 1. Bacteriology	4
Optional	2
	18

Sophomore Year

First Half-year	
Agr. Chem. 1 and 2. Gen Chem	5
†C. E. 1E. Surveying Theory and Field Work	3
Geology 1A. General Geology	3
Mil. 1A. Military Drill	½
Mil. 2B. Theory	1
Zoology 1A. General Zoology	4
*Optional	2 or 5
	18½

Second Half-year	
†C. E. 1E. Surveying Theory and Field Work	3
Genetics 1. Prin. of Breeding Plants and Animals	4
Land. Gard. 1. Plant Propagation	4
Mil. 1B. Drill	1
Soils 1. Origin, Formation, Classification and Management	4
*Optional	3 or 6
	19

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* C. E. 1E may be taken either half-year, hence optional units vary, depending on half-year this subject is taken.

† Students with matriculation credit in these subjects need not register for them.

Including matriculation units, all students must complete as soon as possible, and before graduation, English, 12 units, and pass an examination in subject A; mathematics, including trigonometry, 12 units; foreign language, 12 units and pass an examination in subject B; history or economics, 9 units; mechanical drawing and surveying. If the student has entered with the minimum matriculation requirements of 6 units each of English, mathematics, and foreign language and 3 units of history, he must complete in the University 6 units each of English, mathematics, foreign language, and economics.‡ These subjects he will ordinarily take during his freshman and sophomore years.

SUMMER PRACTICE

Each student is required to take summer practice connected with his proposed major subject before beginning his junior year. The work is carried on as far as possible just as in actual practice. It is intended to give the student an insight into his future occupation. The courses begin usually immediately following commencement. Expenses vary with the subject selected. At Davis the expense for room, board, and incidentals need not exceed $50 for a period of six weeks. In some subjects, railway fare and other incidentals of travel may bring the expense up to $150.

Students must select the particular subject which they will take at the beginning of the second half of the sophomore year, place the same upon their study list and have it approved by the professor in charge of their major subject. Women may offer in lieu of summer practice 6 units of approved work in the Summer Session.

JUNIOR AND SENIOR YEARS

Each student is required during his junior and senior years to complete 60 units of work. Not more than 16 may be taken in any half-year without permission granted upon formal petition. Among the 60 units normally taken, 36 must be in courses in the Department of Agriculture or in closely related departments, numbered 100 or over. The courses numbered 100 or over are known as major courses. Fourteen of the 36 units must be selected from some single division of the Department of Agriculture. Hence a student is said to be majoring in a given subject when he chooses 14 units from a single division and chooses the major subject requirements for that division. Examples of programmes for the seventeen major divisions or groups in which a student may major are outlined in the following pages. Students are cautioned that these outlines are mere examples of programmes. No student is required to follow any set programme during his junior and senior years. All that the student is actually required to do is to complete 36 units of major courses in the Department of Agriculture and related departments, of which 14 must be in the subject in which the student is majoring. Twenty-four of the 60 units of the junior and senior years may be in any courses in the University without regard to their numbering, in which the student is qualified to enter. The work of the junior and senior years is, however, carried on under the direction of the head of the division in which the major subject is taken, and all junior and senior study lists are approved by him before presentation for signature by the dean.

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‡ Three units may be in history.

MAJOR SUBJECTS WITH REQUIREMENTS

Agricultural Chemistry—Chemistry 6A–6B.
Agricultural Education—Botany 116 and Economics 1A or 120.
Agronomy—Botany 116 and Economics 1A or 120.
Animal Husbandry—Physiology 1.
Citriculture—Botany 116 and Economics 1A or 120.
Dairy Industry—Physiology 1 or Chemistry 5.
Entomology—Entomology 1, 2, and 3.
Forestry—Civil Engineering 1A, 1B, 1C, 1D, 3A; Botany 104A and 6 units of Economics.
Irrigation—Civil Engineering 1A, 1B, 1C, 1D, 3A; Physics 2A; Mathematics 1A, 1B.
Landscape Gardening and Floriculture—(*a*) Botany 116 and Drawing A, B, C, D; (*b*) Botany 116 and Economics 1A or 120.
Nutrition—Chemistry 5.
Parasitology—Physiology 1, Hygiene 3, Entomology 1, 4, and 5.
Plant Pathology—Botany 105A.
Pomology—Botany 116 and Economics 1A or 120.
Poultry Husbandry—Physiology 1.
Soils and Fertilizers—Chemistry 5.
Viticulture and Enology—(*a*) Botany 116 and Economics 1A or 120; (*b*) Chemistry 5.

3. **Forging Practice.** Mr. Ingrim.

Designed to give the student the principles and practice in all kinds of farm blacksmithing, such as bending, forming, welding and keeping in repair all farm machinery.

6 hrs., second half-year; 2 units. W Th, 8–11.

2. **Shop Practice.** Mr. Belton.

Practical use of wood-working tools; model work demonstrating use of the steel square in roof framing and building construction.

6 hrs., second half-year; 2 units. M Th, 8–11.

AGRICULTURAL CHEMISTRY

Chemistry offers the only available methods for the more precise measurement and proper study of many of the most important phenomena observed in agriculture. In this lies the justification for courses in chemistry dealing with agricultural materials. These substances are so sensitive to their surroundings, their natural environment is of such a complex character and so difficult to control in practice, that the two cannot be adequately considered independently. The courses in Agricultural Chemistry are designed to familiarize the student with materials and methods of manipulation and to give facility in interpreting his results and the practical utilization of the data obtained. These courses are co-ordinated with work in organic chemistry, biological chemistry, food analysis, and soil chemistry. Training of this type offers preparation for the career of teacher, investigator, or professional agricultural chemist, in all of which there is abundant opportunity.

COURSE OF STUDY

Summer practice course, Agricultural Chemistry 99, must precede the junior year.

Required for major subject: Chemistry 6A and 6B, preferably taken in sophomore year.

Foreign language: A reading knowledge of German is required; French advised.

EXAMPLE OF PROGRAMME

Junior

First Half-year		*Second Half-year*	
Agr. Chem. 101A. Adv. Agr. Chem.	3	Agr. Chem. 101B. Adv. Agr. Chem.	3
Agr. Chem. 104. Seminar	1	Agr. Chem. 102. Fertilizers	3
Bot. 116. Economic Botany	3	Agr. Chem. 104. Seminar	1
Chem. 8A—Organic Chemistry	2	Chem. 8B. Organic Chemistry	2
Pom. 120—General Pomology	3	Chem. 9. Organic Chemistry Lab.	2
German or French	3	Soils 101. Soils of the U. S.	3
		Viticulture 112. Zymology	3
	15		17

Senior

First Half-year		*Second Half-year*	
Agr. Chem. 103A. Lab. and Seminar	3	Agr. Chem. 103B. Thesis	4
Agr. Chem. 104. Seminar	1	Agr. Chem. 104. Seminar	1
Nutrition (food adulteration, to be arranged)	3	Soils 123. Soil Bacteriology	3
Soils 122. Soil Chemistry	3	Physiological Chem. 5. Biochemistry	5
Nutr. 114. Principles of Nutrition	2	Chem. 121. Adv. Inorganic Chem.	3
Chem. 102A. Organic Chemistry	3		
	15		16

102. **The Chemistry of Fertilizers.** Professor Burd.

The relations of fertilizers to plants and soils; chemical examination with special reference to agricultural and commercial evaluation; the correlation of chemical properties and physical texture with availability.

7 hrs., second half-year; 3 units. Lecture to be arranged. Laboratory, M F, 1–4.

2. **Agricultural Laboratory.** Professor Burd and Assistants.

Experiments with and laboratory tests of agricultural materials. Designed to illustrate general principles and call attention to important facts.

6 hrs., first half-year; 2 units. Section I, M F, 2–5; Section II, Tu Th, 2–5.

AGRICULTURAL EDUCATION

The Division of Agricultural Education offers instruction in courses which, accompanying instruction in technical agriculture, are intended to prepare students for efficient agricultural teaching.

These courses include study of the materials and methods adapted to agricultural instruction in secondary and elementary schools, accompanied by carefully supervised practice work; a special course dealing with the place and function of the high school farm and garden, together with the practice in planning and executing problems and demonstrations out of doors; study of special methods to be employed in the teaching of general science and first-year agriculture.

RECOMMENDATIONS FOR TEACHER'S CERTIFICATE

For a recommendation to teach agriculture in high schools the student must major in Agricultural Education, taking Agricultural Education courses 101, 102, and 104. In addition to the required courses, it is urged that students take at least one course in agronomy, entomology, pomology, plant pathology, farm management, animal husbandry, dairy industry, poultry husbandry, and veterinary science.

COURSE OF STUDY

Summer practice course, Agricultural Education 99, must precede the junior year.

Required for major subject: Botany 116 and Economics 1A or 120.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Agr. Ed. 102. General Science	3
Bot. 116. Economic Botany	3
Irrig. 103—Supply and Use of Water	2
Pl. Path. 120. Diseases of Plants	4
Pom. 120. General Pomology	4
	16

Second Half-year *University Farm, Davis*	
A. H. 105. Judging	4
D. I. 127. Milk Products	3
Exp. Irrig. 120. Irrigation Practice	3
Poultry Hus. 101. Gen. Management	3
Vet. Sc. 111. Care and Diseases	4
	17

SENIOR

First Half-year	
Agr. Ed. 104. Agriculture in Secondary Schools	3
Agr. 106. Cereals	3
Ed. Group I	3
Agr. 118. Farm Management	3
Ent. 104. General	4
Seminar or Thesis	2
	18

Second Half-year	
Agr. Ed. 101. High School Agriculture Teaching	3
Agr. 120. Crop Production	3
Econ. 120. Agricultural Economics	3
Ed. Group II	3
For. 1. Elements of Forestry	3
Seminar or Thesis	2
	17

100B. **Agriculture in Elementary Schools.** Assistant Professor KERN.

The course is specially designed to meet the needs of prospective teachers of elementary agriculture. Lectures, laboratory, and garden work.

5 hrs., second half-year; 3 units. Lectures, M Tu, 2; lab. and garden work, W, 1–4.

101. **High School Farms, Gardens, and Community Work.**

Associate Professor HUMMEL.

Lectures, reports, and conferences on the utilization of land in connection with high school agricultural teaching and a study of the means by which the agricultural education facilities of a school can be brought into intimate and helpful relation with the farm and home life of the community supporting the school; practice in planning and executing school farm problems and demonstrations. 2 hrs., lecture or reports, 3 hrs. practice, second half-year; 3 units.

AGRONOMY

The courses outlined by the Division of Agronomy are intended to offer thorough and comprehensive instruction in field and forage crops, crop production, and farm management. They are co-ordinated with the courses in Animal Husbandry, Dairy Industry, Soil Chemistry, Soil Technology, and Genetics, so that the student shall get a comprehensive knowledge of the three branches of agricultural science—the soil, the plant, and the animal. The courses in farm management correlate the information obtained in the other courses to the end that the student may understand the principles involved in conducting a farm as a profitable business.

In addition, investigations are conducted in soil management and crop production at the University Farm, Davis; at Kearney Park, Fresno; and at Meloland, Imperial Valley. Through these agencies the students are given varied opportunities for farm practice and investigation. They also afford advantages to students desiring to pursue graduate work in the many phases of soil management or crop production.

COURSE OF STUDY

Summer practice course, Agronomy 99, must precede the junior year. Required for major subject: Botany 116 and Economics 1A or 120.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Agron. 106. Cereals	3
Agron. 130. Conference	1
A. H. 100. Farm Animals	3
Bot. 116. Economic Botany	3
Irrig. 103. Supply and Use of Water	2
Pom. 120. General Pomology	3
	15

Second Half-year *University Farm, Davis*	
Agron. 107. Forage Crops	3
Agron. 100. Advanced Practice, *or*	
Agron. 111. Field Practice	3
A. H. 101. Management of Beef, Hogs, etc.	4
Exp. Irrig. 120. Irrigation Practice	3
Farm Machinery 101. Machinery	4
	17

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Agron. 130. Conference	1
Ent. 2 and 3. Economic and Supplementary Course	3
Gen. 120. Pro-seminar	3
Pl. Path. 120. Diseases of Plants	4
Soil Chem. 122. Soil Fertility, *or*	
D. I. 132. Dairy Fundamentals	3
	17

Second Half-year	
Agron. 120. Crop Production	3
Agron. 108. Agrostology	3
Agron. 130. Conference	1
Cit. 101. Fruits, *or*	
Soils 101. Soils of the U. S.	3
Econ. 120. Agricultural Economics	3
Soils 123. Soil Bacteriology, *or*	
Vet. Sc. 100. Diseases of Farm Animals	3
	16

100. Advanced Practice. Assistant Professor MADSON.

Practice and correlated problems in crop production as conducted in the field with experimental plots. 9 hrs.; 3 units; second half-year.

107. Forage Crops. Assistant Professor KENNEDY.

The plants which produce feed for live-stock; their characteristics, adaptations and culture methods; the principles underlying the maintenance of meadows, pastures and ranges. Lectures and demonstrations.

5 hrs., second half-year; 3 units. M, 11; Tu, 9; M, 1–4.

ANIMAL HUSBANDRY

Instruction consists of classroom and practice work in management, feeding, breeding, and judging of the various classes of farm animals. The courses are intended to give a knowledge of the recognized breeds and classes of farm animals and of the principles underlying the successful management of a live-stock business. The work is planned essentially for men who expect to become farmers and stockmen, and with this end in view is made as practical in its nature as possible.

The University Farm is equipped with modern buildings. Flocks and herds of high-class representatives of most of the pure breeds of farm animals are maintained for study and use in classrooms. A herd of grade cows, representative of the better class of cows now in the working dairies of the state, is kept for experimental use and to demonstrate how such a herd may be improved by breeding and selection. Steers bred and fed at the University farm for class work have received the highest awards at the last three California State Fairs.

COURSE OF STUDY

Summer practice course, Animal Husbandry 99, must precede the junior year.

Required for major subject: Physiology 1.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

A. H. 100. Farm Animals	3
Econ. 1A. Principles of Economics	3
Ent. 116. Veterinary Parasites	4
Physiol. 1. Introductory Physiology	4
Pom. 120. General Pomology	3
	17

Second Half-year
University Farm, Davis

A. H. 101. Feeding and Management	4
A. H. 105 or 106. Judging	4
A. H. 107. Principles of Breeding	3
D. I. 127. Milk, *or*	
Agron. 107. Forage Crops	3
Vet. Sc. 111. Care and Diseases	4
	18

SENIOR

First Half-year

Bot. 116. Economic Botany	3
Irrig. 103. Supply and Use	2
Agron. 118. Farm Management	3
Vet. Sc. 117. Bacteriology of Milk	3
Agron. 106. Cereals	3
Thesis	2
	16

Second Half-year
University Farm, Davis

A. H. 102. Management of Beef, Hogs, etc.	4
A. H. 105 or 106. Judging	4
A. H. 110. Seminar	1
Exp. Irrig. 120. Irrigation Practice	3
Farm Mech. 101. Farm Machinery	4
Thesis	2
	18

106. **Judging Beef Cattle, Sheep, and Horses.**

Professor TRUE and Assistant Professor THOMPSON.

Lectures on the origin, history, and development of breeds and practice work in judging. Two lectures, two laboratory periods; 4 units; second half-year.

101. **Management of Farm Animals.** Assistant Professor MILLER.

The care and management of cattle and hogs; lectures and practice work in feeding and care of animals in the breeding herd and fitting stock for exhibition purposes. Two lectures and two laboratory periods; 4 units; second half-year.

CITRICULTURE

Instruction given in citriculture at Berkeley includes lectures and laboratory work covering all phases of the citrus industries of the world and of citrus production in California in particular. Practice work which is adaptable to the laboratory, such as the systematic study of species and varieties, morphology of the fruits and other plant parts, root stocks and pests, is given at Berkeley. Practice work in land judging, planting, pruning, and packing is given in commercial orchards where special arrangements can be made. Instruction in semi-tropical and tropical fruits, including dates, olives, figs, avocados, guavas, loquats, Japanese persimmons, pomegranates, mangoes, and others, is given by lectures, laboratory, and field practice.

The aim of the division is two-fold: first, to educate by means of courses in citriculture; and second, to equip graduates with the knowledge and practice required successfully to prepare, plant, and operate citrus orchards and plantations of semi-tropical fruits on a commercial scale.

The courses are correlated with those in Agronomy, Pomology, Viticulture, Genetics, Entomology, Plant Pathology, Soils, Irrigation, and Farm Mechanics.

COURSE OF STUDY

Summer practice course, Citriculture 99, must precede the junior year.
Required for major subject: Botany 116 and Economics 1A or 120.
One semester at the University Farm at Davis is optional.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Bot. 116. Economic Botany	3
Ent. 1 and 3. General and Supplementary Course	3
Irrig. 103. Supply and Use of Water	3
Pl. Path. 120. Diseases of Plants	4
Bot. 105A. Cryptogamic Botany	3
	16

Second Half-year *University Farm, Davis*	
Agron. 107. Forage Crops	3
A. H. 101. Management	4
Exp. Irrig. 120. Irrigation Practice	4
Farm Mech. 101. Farm Machinery	4
Pom. 103. Orchard Practice	3
	18

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Cit. 102. Semi-tropical Fruits	4
Cit. 103. Pro-seminar	2
Ent. 122. Citrus Fruit Insects	3
Pom. 101. Fruit Growing	3
Thesis	2
	17

Second Half-year	
Cit. 101. Citrus Fruits	4
Cit. 104. Citrus Investigations	1
Econ. 120. Agricultural Economics	3
Cit. 105. Advanced Citrus	3
Pom. 104. Transportation, Storage, and Marketing	3
Thesis	2
	16

99. Practice in Citriculture. Prof. COIT and Asst. Prof. CONDIT.

A traveling practice course in citrus and other semi-tropical fruits designed to bring the student into active contact with the great fruit industries of the state and to give him some actual practice in as many of the operations of fruit production as practicable.

6 weeks; beginning the day after commencement; daily except S; 6 units.

105. Advanced Citrus Fruits. Prof. COIT and Asst. Prof. CONDIT.

Classification, morphology, and chemistry of citrus fruits. History and status of citrus industry in the United States and foreign countries. Lectures, written reports and laboratory; 3 units. 5 hrs., second half-year.

DAIRY INDUSTRY

The courses offered by the Division of Dairy Industry furnish instruction and practice in the field of dairy manufactures, market milk production, and the testing of dairy products. Related to the Dairy Industry courses outlined are courses in Animal Husbandry, Veterinary Science, Farm Mechanics, and Irrigation, so that the student may get a broad knowledge of the subjects which are of the greatest importance to one majoring in this division. The work is planned to be of practical value when the student enters commercial dairying.

The equipment at the University Farm consists of testing laboratories, with steam, hand, and electric testers, as well as other apparatus necessary for making the ordinary commercial tests of dairy products; a commercial creamery which is in daily operation and which is equipped to handle and manufacture dairy products in an approved manner; market milk machinery, including milk pasteurizers, bottling machines, sterilizer, and many different makes of separators; complete apparatus for cheese making; a large brine ice-cream freezer, a small power freezer, an ice crusher, and other ice-cream equipment; refrigeration machinery and an ice plant, boiler, steam engines, and tools for dairy mechanics.

COURSE OF STUDY

Summer practice course, Dairy Industry 99, must precede the junior year. Required for major subject: Physiology 1 or Chemistry 5.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
A. H. 100. Farm Animals	3
Econ. 1A. Principles of Economics	3
Ent. 116. Veterinary Parasites	4
Physiol. 1. Introductory Physiology	4
Pom. 120. General Pomology	3
	17

Second Half-year *University Farm, Davis*	
Agron. 107. Forage Crops	3
A. H. 105. Judging	4
D. I. 127. Milk and Milk Products	3
Farm Mech. 101. Farm Machinery	4
Vet. Sc. 111. Care and Diseases	4
	18

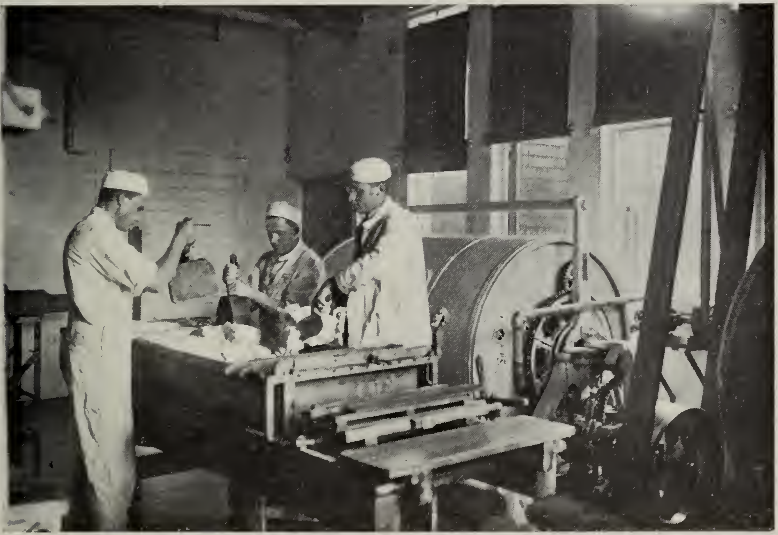
SENIOR

First Half-year	
Bot. 116. Economic Botany	3
Irrig. 103. Supply and Use of Water	2
Agron. 118. Farm Management	3
Vet. Sc. 117. Bacteriology of Milk	3
Agron. 106. Cereals	3
Thesis	2
	16

Second Half-year *University Farm, Davis*	
A. H. 101. Management	4
A. H. 108. Milk Production	3
A. H. 107. Principles of Breeding	3
D. I. 128. Factory Methods, *or*	
D. I. 130. Market Milk	3
Exp. Irrig. 120. Irrigation Practice	3
Thesis	2
	18

129. **Ice Cream Making.** Mr. Baird.

Instruction and practice in making plain and fancy ice cream, ices, and sherbets. 4 hrs., second half-year; 2 units. 1 lecture, 1 laboratory period.



128. **Factory Methods.** Mr. Douglass.

Study of the principles of creamery butter making; pasteurization, ripening, and churning of cream; handling and marketing of butter; instruction and practice in making cheese. 5 hrs., second half-year; 3 units.

ENTOMOLOGY

Entomological instruction is co-ordinated with the instruction in nearly all the divisions in the Agricultural Department and in the Biological and Medical departments. The relation of insects to human interests is the leading subject matter in all the courses.

Students intending to specialize in Entomology are advised to begin their entomological work in their freshman year, but special introductory courses are provided in the junior year for those who do not begin their entomological studies earlier.

The courses relating to human and animal parasites are presented under *Parasitology.*

Special attention is also given to Taxonomy, General Insect Biology, Forest Entomology, Insecticides, Horticultural Entomology, and Bee keeping.

Equipment for the advanced study of the latter subject is located at Davis, and graduate work in citrus insects is given at Riverside.

The programmes given in any division with the elective work, summer course, and thesis in Entomology will be acceptable for students specializing in this subject. The example of programme given below is suggested for students specializing in *Horticultural Entomology.*

COURSE OF STUDY

Summer practice course, Entomology 99, must precede the junior year.
Required for major subject: Entomology 1, 2 and 3.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Bot. 105. Cryptogamic Botany	3
Bot. 116. Economic Botany	3
Ent. 1, 2, 3. General, Economic, and Supplementary	5
Pom. 120. General Pomology	4
Sc. Illus. 101. Scientific Drawing	2
	17

Second Half-year	
Cit. 101. Citrus Fruits	4
Ent. 4. Elementary Systematic Entomology	3
Ent. 121. Life History Work	3
L. G. 101. Ornamentation of Home Grounds	3
Vit. 116. Maintenance of Vineyards	3
	16

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Ent. 5. General Laboratory	2
Ent. 103. Special Problems	4
Physiol. 110. Cell Processes	2
Pl. Path. 120. Diseases of Plants	4
	15

Second Half-year	
Agr. Ed. 5. Agencies for Rural Progress	3
Ent. 27. Ecology	3
Ent. 112. Advanced Entomology	3
Ent. 120. Inspection Laws	3
Physiol. 5. Elementary Biochem.	3
	15

211. Growth. Professor WOODWORTH.

The utilization of food by organisms; the comparison of the feeding and fasting animal; the effect of temperature, and the effect of poisons and nutrition.

Lectures and seminar, Tu Th, 8, first half-year. Laboratory hours to be arranged.

121. Life History Work. Dr. VAN DYKE.

Method and practice in working out the life histories of insects in insectary and field.

6 to 9 hrs., either half-year; 2 to 3 units. Tu W Th, 1–4. Prerequisite: course 1, 2 or 4.

FORESTRY

The courses in forestry are designed to meet the needs of the following classes of students: (1) students whose major work is in other lines but who wish a general knowledge of the relation of forestry to the welfare of the community, or who wish detailed technical instruction in certain parts of forestry, such as wood technology; (2) students who wish to take a full university course in forestry, either as a means of general education or as preparation for the profession of forestry; (3) students who wish to prepare themselves as logging engineers.

A four-year professional forestry course and a five-year professional forestry course are offered. The latter leads to the Master's degree. A four-year course for students wishing to specialize in logging engineering is also offered. The list below shows the recommended sequence of studies for the last two years of the four-year professional forestry course. Detailed information regarding the five-year forestry course and the course in logging engineering may be obtained from the Division of Forestry.

COURSE OF STUDY

Summer practice work preceding junior year will be as follows: Surveying, Civil Engineering 3A, 4 weeks, in civil engineering camp; Forestry 99, 6 weeks, in forestry camp; Logging field trip, 1 week.

Required for major subject: Civil Engineering 1A, 1B, 1C, 1D, and 3A; Botany 104A; 6 units of Economics.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Bot. 104A. Forest Botany	3	Econ. 1B. Principles of Economics	3
Econ. 1A. Principles of Economics	3	Ent. 4. Elementary Entomology	3
For. 108. Timber Trees	3	For. 102. Forest Ecology	3
For. 112. Forest Utilization	4	For. 110. Forest Protection	3
Pl. Path. 120. Diseases of Plants	4	For. 114. Wood Technology	3
	17		15

SENIOR

First Half-year

First eight weeks, in camp	
For. 104. Natural Reproduction	3
For. 116. Forest Engineering	1
For. 120. Forest Organization	4
Second eight weeks, at Berkeley	
For. 118. Forest Engineering	2
For. 122. Finance and Administration	3
For. 122. Law, Policy, and History	3
	16

Second Half-year

Agron. 108. Agrostology	3
Ent. 114. Forest Insects	3
For. 106. Artificial Reproduction	3
For. 128. Seminar	3
Hygiene 6. First Aid	2
	14

106. **Artificial Reproduction.** Assistant Professor METCALF

Tree seeds; direct seeding; the forest nursery; forest planting; fixation of sand dunes. 6 hrs., second half-year; 3 units. Lectures, Tu Th, 9; laboratory or field work, W, 1–5.

114. **Wood Technology.** Assistant Professor PRATT.

Identification of economic woods; structure of wood; physical, chemical, and mechanical properties of wood; seasoning; wood preservation; paper pulp; destructive distillates.

5 hrs., second half-year; 3 units. Lectures, Tu Th, 10; laboratory, Th, 1–4.

IRRIGATION

The instruction in Irrigation and Drainage offered by the Department of Irrigation for students in the College of Agriculture is designed to meet the needs of the following classes of students:

First.—Those who are planning to use a knowledge of irrigation practice as an aid to successful agriculture. For these students the following courses are recommended: Irrigation 101, 103, 104, and 105. Course 103 on the agricultural use of water and irrigation is especially recommended.

Second.—Those who are preparing themselves for positions in the operation, maintenance, and management of irrigation systems and companies; or for investigational work such as that carried on by the United States Department of Agriculture or in agricultural colleges. For these students the course of study outlined below gives the proper correlation and sequence of allied subjects.

COURSE OF STUDY

For students in the College of Agriculture who wish to prepare for irrigation farmer, water master, manager or superintendent.

Summer School Surveying (Civil Engineering 3A) prescribed.

Required for major subject: General Physics (2A), Elements of Analysis (Mathematics 1A, 1B), and Surveying (Civil Engineering 1A, 1B, 1C, 1D, 3A).

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Econ. 14. Accounting	3	Agron. 120. Crop Production	3
Geog. 2. Meteorological Practice	2	C. E. 8D. Materials	2
Irrig. 103. Supply and Use of Water	2	Irrig. 101. Institutions and Econ.	3
Mechanics 1A. Steam Engineering	3	Irrig. 105. Agricultural Hydraulics	3
Physics 2A. General Physics	2	Mechanics 1B. Electrical Engineering	3
Pom. 120. General Pomology	3	C. E. 124. Water Supply and Sewage	3
	15		17

SENIOR

First Half-year		*Second Half-year*	
Agron. 118. Farm Management	3	Cit. 101. Citrus Fruits	4
Farm Mechanics 1. Use of Farm Machinery	3	Econ. 120. Agricultural Economics	3
A. H. 100. Farm Animals	3	Irrig. 207. Management	2
Irrig. 104. Drainage	2	Juris. 18B. Commercial Law	2
Irrig. 105A. Drawing	2	Soils 101. Soils of the U. S.	3
Juris. 18A. Commercial Law	2	Thesis	2
Thesis	2		16
	17		

120. **Irrigation Practice.** Assistant Professor Beckett.

Practical field problems in the preparation of land, conveyance, measurement and application of water to various crops.

7 hrs., second half-year; 3 units. Prerequisite: Irrigation 103, Civil Engineering **1A, 1C, or 1E.**

105. **Agricultural Hydraulics.** Assistant Professor Harding.

Principles of hydraulics for irrigated agriculture; planning and construction of irrigation ditches and structures.

3 hrs., second half-year. Tu Th S, 9. Open to students in the College of Agriculture. Not open to students who receive credit for Irrigation 2. Prequisite: Civil Engineering 1, Physics 1 or Physics 2A–2B.

LANDSCAPE GARDENING AND FLORICULTURE

The course in Landscape Gardening is designed, first, to offer professional instruction both theoretical and practical to those who desire to become either successful practitioners of the art, competent office assistants, or reliable superintendents of construction; and, second, to furnish instruction of an untechnical nature that will enable others to become familiar with the fundamental principles governing the art.

The course in Floriculture is designed to furnish theoretical and practical instruction to those who intend to become eventually wholesale or retail commercial growers of cut flowers and potted plants, competent florists on private estates or in public parks. As facilities permit, students will be allowed to specialize in the growing of certain crops, store management, including artistic design and decoration and other phases.

COURSE OF STUDY

Summer practice course, Landscape Gardening 99 or Floriculture 99, must precede the junior year.

Requirements for major subject in Landscape Gardening: Botany 116; Drawing A-B and C-D.

Requirements for major subject in Floriculture: Botany 116 and Economics 1A or 120.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Bot. 116. Economic Botany	3	C. E. 8D. Materials	2
Drawing 2A. Descriptive Geometry	3	Drawing 2B. Descriptive Geometry	3
Drawing 114A. Advanced Free-hand	2	Drawing 114B. Advanced Free-hand	2
Irrig. 103. Supply and Use of Water	4	Ent. 131. Field Work	3
L. G. 103. Theory	4	L. G. 104B. Plant Materials	2
L. G. 104. Plant Materials	2	L. G. 105. Elementary Landscape Gardening	4
	16		16

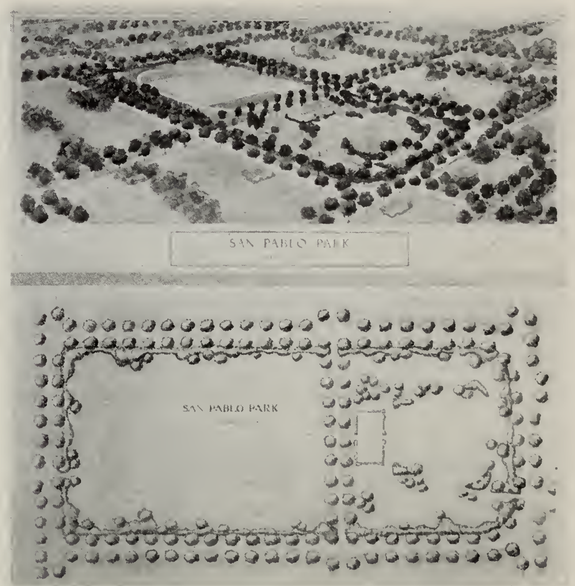
SENIOR

First Half-year		*Second Half-year*	
Arch. 101A. Elements of Architecture	3	Arch. 101B. Elements of Architecture	3
C. E. 106. Highway Engineering	2	C. E. 116. Contracts and Specifications	1
L. G. 104C. Plant Materials	2	Drawing 9. Lettering	1
L. G. 108. Tree Surgery	3	L. G. 106B. Advanced Landscape Gardening	4
L. G. 106A. Advanced Landscape Gardening	4	L. G. 107. History and Literature	2
Thesis	2	Sc. Illus. 102. Scientific Photography	2
		Thesis	2
	16		15

108. **Tree Surgery.** Professor Gregg.

The study and practice of the most approved methods of caring for ornamental trees; the technical details of planting, pruning and spraying, bolting, chaining and cavity work; shade tree legislation and the duties of shade tree commissions and tree wardens.

4 hrs., first half-year; 3 units. Lectures, W, 1; laboratory, F, 8–11.



106A–106B. **Advanced Landscape Gardening.**

Professor Gregg and Assistant Professor Stevens.

A study of the more advanced problems of design, and reconstruction from topographic and transit surveys as offered by the larger areas of parks, playgrounds, and country estates, with detailed plans, reports, and estimates.

12 hrs., throughout the year; 4 units each half-year. Drafting, M, 9–12; Tu Th F, 2–5. Prerequisite: courses 104A–104B and 105.

NUTRITION

The courses offered by the Division of Nutrition comprise lecture and laboratory work both in animal and human nutrition.

Animal Nutrition.—The object of the general lecture course is to familiarize the student with the fundamental principles of nutrition and the most effective and economical methods of supplying these needs to the animal. This knowledge is highly essential to those electing animal and poultry husbandry.

Human Nutrition.—The lecture courses are offered for the purpose of giving the student a thorough knowledge of the principles of human nutrition, the chemical composition of foods, their relation to the needs of the body, etc. The methods of constructing dietaries for individuals and groups form a large part of the advanced work. Additional work is offered for the student specializing in Home Economics. Facilities are offered to acquire technique in the chemical and microscopical analysis of human, cattle, and poultry foods, including the methods for detection of adulterants.

COURSE OF STUDY

Summer practice course, Nutrition 99, must precede the junior year.
Required for major subject: Chemistry 5.

EXAMPLE OF PROGRAMME

Junior

First Half-year	
Econ. 1A. Principles of Economics	3
Chem. 8A. Organic Chemistry	2
Nutr. 2. Pure Food Laws	2
Nutr. 109. Chemistry of Milk	3
Nutr. 114. Principles of Nutrition	2
Pom. 120. General Pomology	3
	15

Second Half-year *At Davis—Specializing in Animal Nutrition*	
Agron. 107. Forage Crops	3
A. H. 101 or P. H. 101. Feeding and Management	4-3
D. I. 116. Testing Dairy Products	2
Farm. Mech. 101. Machinery	4
Vet. Sc. 111. Care and Diseases	4
	17-16

Senior

First Half-year	
Agron. 106. Cereals	3
Agron. 118. Farm Management	3
Nutrition Seminar and Laboratory	2
Soils 122. Soil Chemistry, *or*	
Nutr. 108. Chemistry of Milk	3-2
Vet. Sc. 117. Bacteriology of Milk	3
Thesis	2-3
	16

Second Half-year	
Pom. 104. Fruit Transportation, Storage, and Marketing	3
Nutrition, Seminar and Laboratory	2
Viticulture 118. Zymology	3
Viticulture 115. Zymology	3
Nutr. 119. Applied Dietetics, *or*	
Viticulture 112. Zymology	3
Thesis	2
	16

117. **Laboratory Course in Food Chemistry.** Asst. Professor Mattill.
Chemical and microscopical methods for examination and analysis of human foods and methods for detection of adulteration. 7 hrs., either half-year; 3 units.

2. **Pure Food and Drug Laws and Their Operation.**
Professor Jaffa and Associate Professor Lea.
The history of food legislation; critical discussion of national, state, and municipal laws on food inspection and control; the use of preservatives; adulteration and misbranding of foods; human foods and those for cattle and poultry. Lectures and recitations. 2 hrs., first half-year. M W, 8.

PARASITOLOGY

The courses are intended to offer thorough training in Parasitology to equip prospective teachers in this field, for which there is an occasional demand, and for the training of experts as demanded in the various fields of Public Health, Sanitation, and Animal Industry. Courses are also designed to supplement the instruction in Veterinary Science, Animal Industry, Hygiene and Public Health, particularly Rural Public Health, in which a special course is offered in this division.

An adequate collection of parasitic protozoa, worms, insects, and arachnids is available for study. Ample laboratory facilities are offered, including the usual biological equipment in addition to a bacteriological incubator, autoclave, large regulated insectary, and in a separate building ample equipment for animal experimentation.

Among the problems receiving special attention during the past few years are malaria control, housefly control, bionomics of fleas and ticks, venomous ticks and spiders, parasites of poultry, parasites of deer, liver flukes of sheep, scab and mange in certain domesticated animals, lung worms in goats, etc.

COURSE OF STUDY

Summer practice course, Entomology 99, must precede the junior year.

Required for major subject: Physiology 1, Hygiene 3 (Epidemiology), Entomology 1, 4, and 5.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

Ent. 1. General Entomology	2
Ent. 116. Veterinary Parasites	4
Vet. Sc. 115. Infectious Diseases, *or*	
Vet. Sc. 117. Bacteriology of Milk	3
Juris. 18A. Commercial Law	2
Physiol. 1. Introductory Physiology	4
Zool. 112. Advanced Vertebrate Zool.	3
	18

Second Half-year

Ent. 2 and 4. Economic and Systematic Entomology	4
Ent. 126. Medical Parasitology	3
Ent. 127. Medical Parasitology Lab.	2
Juris. 18B. Commercial Law	2
Hygiene 108. Applied Hygiene	3
Vet. Sc. 100. Diseases of Farm Animals	3
	17

SENIOR

First Half-year

Ent. 129. Thesis	2
Ent. 200A. Seminar	1
Econ. 110A. Elementary Statistics	3
Hygiene 104. Sanitary Survey	3
A. H. 100. Farm Animals	3
Vet. Sc. 115. Infectious Diseases, *or*	
Vet. Sc. 117. Bacteriology of Milk	3
Zool. 110. Protozoology	3
	18

Second Half-year

C. E. 124. Water Supply and Sewage	3
Econ. 120. Agricultural Economics	3
Ent. 129. Thesis	2
Ent. 200B. Seminar	1
Ent. 216. Tropical Parasitology	3
Pol. Sc. 110A. Local Government	2
Physiol. 5. Elementary Biochemistry	3
	17

216. **Tropical Parasitology.** Associate Professor Herms.

The commoner animal parasites and disease carriers of the tropics and sub-tropics and the diseases which they cause or transmit. 5 hrs., second half-year; 3 units.

116. **Veterinary Parasitology.** Assoc. Prof. Herms and Mr. Freeborn.

The relation of animal parasites and disease carriers to domesticated animals with special emphasis on control. 8 hrs., first half-year; 4 units.

PLANT PATHOLOGY

The work in plant diseases is designed to give, as nearly as possible, a correct understanding of the principles involved in plant disease control for students intending to engage in various practical lines of agriculture, horticulture, forestry, etc. In the past a number of students have taken practically all the undergraduate work offered in this division, although planning to enter work other than technical plant pathology. Such students have engaged in high-class agriculture, horticulture, teaching, and technical work in other lines with marked success.

For those desiring to make plant pathology their profession it may be said that the facilities for work at Berkeley are being constantly improved, while the problems to be investigated in the accessible regions in horticulture, agriculture, floriculture, and forestry are very numerous.

Those intending to specialize in the subject should have early in their work thorough training in botany, chemistry, physiology, bacteriology, entomology, soils, foreign languages, and actual experience in the handling of crops.

COURSE OF STUDY

Summer practice course, Plant Pathology 99, must precede the junior year.

Required for major subject: Botany 105A.

Foreign language: For the normal training for a technical plant pathologist the minimum of foreign language should be Latin, 2 years; German, 2 years; French, 1 year. Further training in these and other languages, especially Italian, is desirable.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Bot. 105A. Cryptogamic Botany	3	German 3B. Technical	3
German 3A. Technical	3	Bot. 104B. Phaenogamic Botany	3
Chem. 6A. Quantitative Analysis	3	Chem. 6B. Quantitative Analysis	3
Pl. Path. 120. Diseases of Plants	4	Vit. 116. Maintenance of Vineyards	3
Pom. 120. General Pomology	3	Ent. 1. General Entomology	2
		Ent. 2. Economic Entomology	2
	16		16

SENIOR

First Half-year		*Second Half-year*	
Bot. 109A. Vegetable Histology	3	Bot. 109B. Vegetable Histology	3
Chem. 8A. Organic Chemistry	2	Chem. 8B. Organic Chemistry	2
Chem. 9. Organic Chemistry Lab.	3	Chem. 100. Organic Chemistry Lab.	3
Pl. Path. 122A. Advanced Course	4	Pl. Path. 122B. Advanced Course	4
Pl. Path. 125A. Special Topics (Thesis)	2	Pl. Path. 125B. Special Topics (Thesis)	2
Pl. Path. 126. Pro-seminar	1	Pl. Path. 126. Pro-seminar	1
	15		15

120. **The Diseases Affecting Cultivated Plants in California.**
Associate Professor HORNE and Assistant Professor SMITH.

Lectures and laboratory studies on diseases of economic plants. A beginner's course covering the subject generally. First half-year; 4 units.

122A–122B. **Advanced Course.** Professor SMITH and STAFF.

Lectures and laboratory work upon the principles of pathology, nature of disease, and the chief disease-inciting influences; study of disease-producing organisms, their development, activities and relation to host plants by means of microscopic, cultural, histological, and infection methods. Systematic reviews of important diseases. 8 hrs., throughout the year; 4 units each half-year.

POMOLOGY

The courses in Pomology are designed to offer thorough instruction in the fundamental principles of fruit growing with special reference to the culture, transportation, storage, marketing, and utilization of deciduous fruits, small fruits, and nuts. Along with the instruction in the technical aspects, laboratory exercises and demonstrations are given in the laboratories at Berkeley, and practice work is given at the University Farm, Davis. Students majoring in Pomology are required to spend the spring semester of their junior or senior year at the University Farm as a requirement for graduation. The work at the Farm includes practice courses in all phases of nursery and orchard work. Opportunity is also given for students, while at the Farm, to take up work along other lines of agriculture, thus broadening their training and point of view.

All students expecting to major in Pomology should confer with the head of the division as early as possible in order that proper electives may be selected to meet the requirements of their major work.

COURSE OF STUDY

Summer practice course, Pomology 99, must precede the junior year.
Required for major subjects: Botany 116 and Economics 1A or 120.
Foreign language: French or German advised.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Bot. 116. Economic Botany	3
Ent. 2 and 3. Economic and Supplementary Course	4
Irrig. 103. Supply and Use of Water	2
Pl. Path. 120. Diseases of Plants	4
Pom. 101. Principles of Fruit Growing	3
	16

Second Half-year *University Farm, Davis*	
A. H. 105. Judging	4
D. I. 127. Milk and Milk Products	3
Exp. Irrig. 120. Irrigation Practice	4
Farm Mech. 101. Machinery	4
Pom. 103. Orchard Practice	3
	18

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Ent. 118. Insecticides and Fungicides	2
Gen. 120. Special Topics, *or*	
Geog. 2. Meteorological Practice	3-2
Pom. 102. Orchard Fruits	3
Pom. 105A. Pro-seminar	1
Pom. 106. Systematic Pomology	2
Thesis	2
	15-16

Second Half-year	
Cit. 101. Citrus Fruits, *or*	
Vit. 116. Maintenance of Vineyards	4
Econ. 120. Agricultural Economics	3
Pom. 104. Transportation, Storage, and Marketing	3
Pom. 105B. Pro-seminar	1
For. 1. Elements of Forestry	3
Thesis	2
	16

103. **Orchard Practice.** Asst. Prof. TAYLOR and Mr. HENDICKSON

A laboratory course designed to give the student actual practice under orchard and field conditions in the various operations of deciduous fruit production; propagation, planting, pruning and spraying. Given at Davis. 9 hrs., second half-year.

106. **Systematic Pomology.** Prof. STUBENRAUCH and Mr. HENDRICKSON.

A technical study of fruit varieties, their botanical and varietal relationships; description, identification, scoring and judging. Laboratory work with informal lectures and recitations. 6 hrs., first half-year; 2 units.

POULTRY HUSBANDRY

This course has been designed to give the student a comprehensive and detailed grasp of the principles and their practical application to the business side of poultry farming in order that he or she may be better fitted to handle successfully the economic problems encountered in the development and management of a poultry plant. A thorough training in the science and art of Poultry Husbandry requires not only that one be versed in hatching, rearing, feeding, breeding, and caring for fowls but also that one know how to handle tools, construct poultry buildings, till the soil and raise grain and forage crops for the stock, irrigate these crops, operate and care for farm machinery, and, finally, to know how to keep accounts and manage a farm on a sound financial basis.

A well-equipped poultry plant of ten acres at the University Farm, on which are kept 2000 fowls of over twenty-five representative varieties, affords students an abundant opportunity to secure practical experience and also to pursue advanced work along investigational lines.

COURSE OF STUDY

Summer practice course, Poultry Husbandry 99, must precede the junior year.

Required for major subject: Physiology 1; Foreign language: a reading knowledge of German or French is required.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Ent. 116. Veterinary Parasitology	4
Pom. 120. General Pomology	3
Physiol. 1. Introductory Physiology	4
Econ. 14. Accounting	3
Econ. 1A. Principles of Economics	3
	17

Second Half-year *University Farm, Davis*	
D. I. 127. Milk and Milk Products	3
Farm Mech. 101. Machinery	4
P. H. 101. Feeding and Care	3
P. H. 102. Management	3
Vet. Sc. 111. Diseases of Animals	4
	17

SENIOR

First Half-year	
Agron. 106. Cereals	3
Agron. 118. Farm Management	3
Bot. 116. Economic Botany	3
Irrig. 103. Supply and Use of Water	2
Vet. Sc. 117. Bacteriology of Milk	3
Thesis	2
	16

Second Half-year *University Farm, Davis*	
Agron. 107. Forage Crops	3
A. H. 102. Feeding	4
Exp. Irrig 120. Irrigation Practice, *or*	
Pom. 103. Orchard Practice	3
P. H. 104. Pro-seminar	2
P. H. 105. Research	3
Thesis	2
	17

102. **Poultry Management.** Assoc. Professor DOUGHERTY and Mr. LLOYD.

A practical course in operating incubators, keeping records, hatching eggs, brooding chicks, feeding and caring for pens of fowls. 3 units; second half-year.

101. **Poultry Husbandry.** Assoc. Professor DOUGHERTY and Mr. LLOYD.

The feeding, housing, breeding, and general management of poultry; study of the egg; anatomy and physiology of poultry; parasites and sanitation.

5 hrs., second half-year; 3 units. 2 lectures and 1 laboratory.

SOILS AND FERTILIZERS

The curriculum for the prospective soils specialist as indicated below is of such a nature as to make it comprehensive. It is intended to give him a good insight into the sciences which are intimately concerned in the production and maintenance of soil fertility and a knowledge of the best methods for their correlation. Thus, studies in soil mapping, soil classification, soil physics, soil chemistry, soil bacteriology, and plant physiology are emphasized and related. The work in soil mapping and classification is calculated to bring the student into close touch with soils and crops in the field, and the laboratory and greenhouse work to give him light on the more intimate nature of the constitution of soils.

The kind of training just discussed equips the soils specialist with qualifications for work in teaching and investigation in state, government, or private institutions which require highly trained men for work in various branches of soils sciences.

The student is advised to take one year of graduate study before going into investigational work. Every encouragement is extended to those who pursue graduate studies.

COURSE OF STUDY

Summer practice course, Soil Technology 99, must precede the junior year.

Major subject requirement: Chemistry 5.

Foreign languages: A reading knowledge of both German and French required.

EXAMPLE OF PROGRAMME

Junior

First Half-year	
Agron. 106. Cereals	3
Bot. 116. Economic Botany	3
Chem. 8A. Organic Chemistry	2
Pom. 120. General Pomology	3
Soils 122. Soil Chemistry	3
Soils 126. Pro-seminar	1
	15

Second Half-year	
Agron. 108. Agrostology	3
Cit. 101. Citrus Fruits	4
Soils 101. Soils of the U. S.	3
Soils 102. Advanced Soil Physics	3
Soils 123. Soil Bacteriology	3
Soils 126. Pro-seminar	1
	17

Senior

First Half-year	
Agron. 118. Farm Management	3
A. H. 100. Farm Animals	3
Irrig. 103. Supply and Use of Water	2
Irrig. 104. Drainage	2
Pl. Path. 120. Diseases of Plants	4
Soils 126. Pro-seminar	1
Soils 127. (Thesis)	2
	17

Second Half-year	
Agr. Chem. 102. Chemistry of Fertilizers	3
Elective	4
Econ. 120. Agricultural Economics	3
Irrig. 101. Institutions and Econ.	3
Soils 126. Pro-seminar	1
Soils 127 (Thesis con.)	2
	16

122. **Soil Chemistry as Related to Soil Fertility.**

Professor LIPMAN and Mr. GERICKE.

The chemical examination of soils, including short methods for some important determinations, and complete analyses of soils; greenhouse and field experiments in conjunction. Laboratory and field exercises, recitations, and lectures.

9 hrs., first half-year; 3 nuits. M W F, 1–4. Prerequisite: Chemistry 1A–1B and 5.

1. **Soil Technology.** Professor SHAW and Mr. SMITH.

The origin, formation, classification, properties, and management of soils.

6 hrs., second half-year; 4 units. Lectures, M W F, 1; laboratory, Section I, M, 2–5; Section II, W, 2–5; Section III, F, 2–5. Prerequisite: Geology 1A (or Geography 1A), and Agricultural Chemistry 1 and 2.

VITICULTURE AND ENOLOGY

Instruction in this division is given to regular and special students at Berkeley by means of courses of lectures on grape growing, wine making, food preservation, and technical zymology, supplemented by laboratory and field courses. Its aim is to prepare students to become efficient managers of vineyards, cellars, and packing houses, or educators and specialists in the various viticultural, fermentative, and food preserving industries. At Davis appropriate instruction in grape growing is given to students. At suitable points throughout the state instruction is given to those actually engaged in the industries by means of lectures and demonstrations.

COURSE OF STUDY

A. Viticulture. B. Enology. C. Technical Zymology

Summer practice course, Viticulture and Enology 99, must precede the junior year.

Required for major subject: A, Botany 116 and Economics 1A and 120; B and C, Chemistry 5.

Foreign languages: A reading knowledge of French or German required. Italian advised.

EXAMPLE OF PROGRAMME

(A. Viticulture)

Junior

First Half-year	
Bot. 116. Economic Botany	3
Ent. 2 and 3. Economic and Supplementary Course	3
Irrig. 103. Supply and Use of Water	2
Pl. Path. 120. Diseases of Plants	4
Pom. 101. Principles of Fruit Growing	3
	15

Second Half-year *University Farm, Davis*	
A. H. 101. Management of Cattle, Hogs, etc.	4
D. I. 127. Milk and Milk Products	3
Exp. Irrig. 120. Irrigation Practice	4
Farm Mech. 101. Machinery	4
Pom. 103. Orchard Practice	3
	18

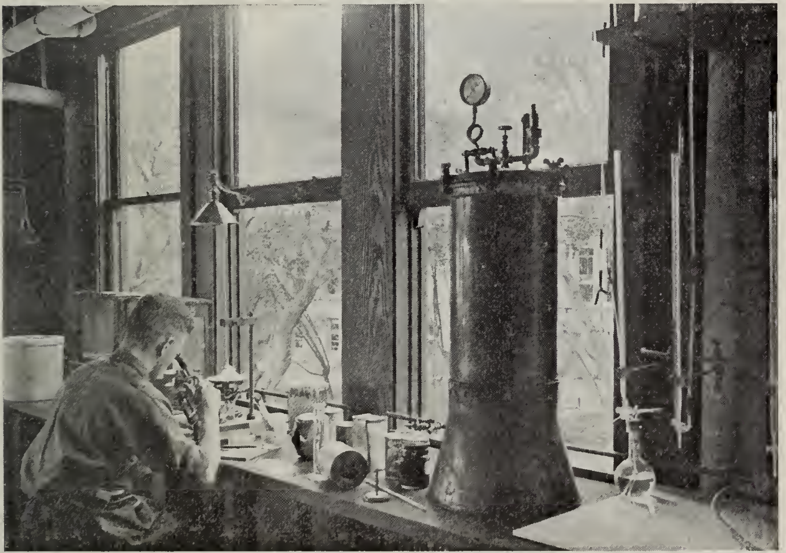
Senior

First Half-year	
Agron. 118. Farm Management	3
Econ. 1A. Principles of Economics	3
Pom. 106. Systematic Pomology	2
Pom. 102. Orchard Fruits	3
Vit. and Enol. 114. Vinification	3
Thesis	2
	16

Second Half-year	
Agr. Chem. 102. Chemistry of Fertilizers	3
Econ. 1B. Principles of Economics	3
Pom. 104. Transportation, Storage, and Marketing	3
Vit. and Enol. 116. Maintenance of Vineyards	3
Vit. and Enol. 117. Diseases of the Vine	2
Thesis	2
	16

99. Practice in Viticulture and Enology. Professor BIOLETTI.

The vineyard and exercises in some of its special operations; pruning and grafting at Davis during the winter vacation; trips for observation and study of vineyards, packing houses and wineries during the summer vacation. 6 units.



118. Zymology: Fruit and Vegetable Products. Asst. Prof. CRUESS.

Laboratory II. The methods and principles of the manufacture of fruit and vegetable products, especially of fruit juices, canned fruit and vegetables, jellies, citrus by-products and fruit acids.

9 hrs., second half-year; 3 units. Tu Th, 1–4; S, 9–12. Course 112 must accompany or precede this course. Prerequisite: Chemistry 1A and 1B.

INSTRUCTION NOT REPRESENTED BY MAJOR SUBJECTS

Certain divisions of the Department of Agriculture offer instruction which is not represented by the seventeen major subjects described in the foregoing pages. The courses given may be elected by any student having the necessary preparation.

AGRICULTURAL ENGINEERING

Present equipment permits of three courses, which may be grouped under the head of Farm Mechanics: (1) Shop practice in wood working; (2) Forging, in which most of the specific items of farm repair work are included; (3) Farm machinery, in which the work is taken up from the standpoint of the agronomist or general farmer rather than from that of the mechanic. The principles underlying the construction and operation of the various implements and machines are considered only in so far as they will enable the student carefully to select and successfully to operate them. The time devoted to each branch of farm machinery is about as follows: Mechanical principles and tillage implements, 4 weeks; harvesting machinery, 4 weeks; power machinery, including gas engines, tractors, motors, and pumps, 7 weeks. Laboratory work includes actual work in the field as far as possible. Each student is required to work up plans and specifications for either a farm workshop and power plant or a pumping plant.

GENETICS

Opportunity is offered to properly qualified students to pursue individual study of special topics, including a pro-seminar, meeting at least once each week for conference, reports, and discussions. For students with such major subjects as agronomy, pomology, citriculture, viticulture, floriculture, forestry, entomology, plant pathology, or animal husbandry, a topic in genetics may be so chosen as to make it closely correlated with the major subject. Present facilities will permit of the following lines of work:

1. Study of variation in plants and animals with reference to evolution and breeding.

Material: Commercial varieties of the peach and allied species; walnuts, walnut hybrids, parthenogens and mutants; parent strains and hybrids of lilies, delphiniums, tomatoes, peas, vetches, maize, strawberries, and other plants, several pure strains of the pomace fly, *Drosophila ampelophila,* and certain beetles.

2. Breeding experiments with seed plants and insects.

Material: Any of the material mentioned under (1) or such other species of plants or animals as may be found practicable.

102. **Scientific Photography.** Mr. Matthews.

Laboratory photography of scientific and agricultural subjects; out-door photography of animals, building, crops; blue printing; copying; enlarging; making of lantern slides; photomicrography; color photography.

6 hrs., second half-year; 2 units. Tu Th, 9–12. Limited to ten students in the College of Agriculture.

3. Cytological study of the reproductive processes in seed plants and insects.

The wealth of plant forms, both wild and cultivated, and of insect life, makes it possible to undertake this line of work at any time. Present facilities will accommodate three or four students.

4. Statistical study of variation and inheritance in tobacco, tomato, and maize.

OLERICULTURE

The work is given at the University Farm, Davis, where ample areas for the practical work are available. The course deals with the principles of vegetable gardening and with the methods of production and marketing applicable to California conditions.

SCIENTIFIC ILLUSTRATION

A division is now maintained for the production of illustrative material, both drawings and photographs, to be used in the publications of the college and Experiment Station. Advanced students who wish to make illustrations in connection with work in the various branches in which they are interested may obtain instruction in photography and in freehand and camera-lucida drawing of scientific subjects. Illustrations for these may be made under the direction of the instructor. This course is open to juniors and seniors in the second half-year.

VETERINARY SCIENCE

The courses offered are designed to supplement the instruction in animal husbandry, poultry husbandry, nutrition, agricultural education, parasitology, hygiene and public health. The instruction in veterinary science does not prepare for the practice of veterinary medicine.

The following equipment and activities are under the supervision of members of the staff of the veterinary division and are utilized in instruction.

The Veterinary Clinic at the University Farm, Davis, affords opportunity for students to obtain instruction concerning the more common unsoundnesses and non-infectious diseases of farm animals. The veterinary building at Davis, used exclusively for the conduct of this clinic, is equipped with all that is necessary for advanced work in comparative pathology and bacteriology, including dairy bacteriology.

The Veterinary and Dairy Bacteriology Laboratory at Berkeley occupies a separate building and is equipped with all necessary apparatus for advanced work in bacteriology and pathology.

100. **Diseases of Farm Animals.** Professors Haring and Roadhouse.

The more common diseases of domesticated animals receive attention. This course is intended for students in Berkeley who are unable to take advanced work in veterinary science at the University Farm. 5 hrs., second half-year; 3 units.

117. **Bacteriology of Milk, Sanitary Milk Production and Dairy Inspection.** Professor Haring and Associate Professor Roadhouse.

All processes concerning the production and distribution of the various grades of milk are studied from a sanitary standpoint. Students will be required to participate in the work at the University Dairy. 5 hrs., first half-year; 3 units.

The University of California Certified Dairy in Berkeley is a self-supporting institution and is operated as a first-class market milk dairy, producing certified milk, cream, and skim milk. This dairy is utilized for student instruction. The equipment consists of 120 acres of pasture land, a barn and sanitary milking stable, a milk house equipped with a refrigerating plant, sterilizer, bottling machine, and other modern dairy machinery.

The Hog Cholera Serum Laboratory is situated in East Oakland. Anti-hog-cholera serum and virus are manufactured here and sold to farmers at actual cost of production. The sales during the past year were sufficient to immunize 50,000 hogs. About 100 head of swine are maintained at this laboratory for use in making the serum and virus.

The Veterinary Tract is 100 acres of land in Strawberry Cañon, Berkeley, set apart by the Regents of the University to be used in experimental work concerning bovine tuberculosis. The equipment consists of two barns and a cottage. At present 60 head of cattle are maintained here for purposes of research concerning tuberculosis.

Dairy Certification consists of expert work in the supervision of certified dairies for the San Francisco County and Alameda County Medical Milk commissions. This includes bacteriological examinations of milk, semi-monthly inspections of dairies, distributing stations, and wagons, and the semi-annual tuberculin testing of about 1000 dairy cows. Students are given an opportunity to take part in a portion of this work.

GENERAL INFORMATION

EXPENSES OF STUDENTS

Tuition in the University, except in the colleges of Medicine, Pharmacy, and Dentistry, is free to residents of the state. Non-residents of California are charged a tuition of $10 each half-year. The following incidental expenses are to be met:

Gymnasium and Infirmary Fees.—The Gynmnasium fee is $2 per half-year and the Infirmary fee is $3 per half-year; both are payable by every student, graduate or undergraduate, before his study card is filed. These fees entitle students to gymnasium and hospital privileges, and are not remitted, in whole or in part, for those who may not desire to make use of these privileges. Gymnasium privileges comprise, besides the use of the gymnasium, tennis courts, swimming pool, baths, lockers, wash rooms, etc. The Infirmary fee entitles students, in case of illness, to hospital care (cost of surgical operations not included) or dispensary treatment. One-half of the amount of these fees is returned to students who leave the University during the first half-year before September 1, or during the second half-year before February 1.

Laboratory Fees.—In the laboratories a charge is made for materials actually used. This charge, for students in the elementary laboratories, amounts to from $5 to $30 per annum.

Military Uniforms.—Every able-bodied male undergraduate student is required to take military exercises during his first two years in the University. A sum sufficient to cover the cost of the uniform, about $18, must be deposited with the Comptroller immediately after admission. Uniforms made by any other than the authorized manufacturer will not be accepted.

Board and lodging may be obtained in private families in or near Berkeley and Oakland at from $25 to $40 a month. They may occasionally be had in return for various personal services in the household. The hours of recitation are such that many students reside in Oakland and San Francisco. The journey from San Francisco requires 40 minutes. The cost of board and lodging, in students' boarding clubs, ranges from $15 to $20 a month. A few students "board themselves" for as low as $15 a month, but this plan of living is not generally to be recommended.

There are no dormitories maintained by the University. Lists of boarding places approved by the University authorities are published at the opening of every session, one list for men and another for women.

The ordinary yearly expenses of a student in the academic departments, including personal expenses, need not exceed $350.

Opportunities for Self-Support.—Board and lodging can often be obtained in exchange for three or four hours of household work daily. Self-supporting students are respected. The Young Men's and Young Women's Christian Associations act as bureaus of information concerning boarding places and opportunities for remunerative employment. The office of the President will also file applications for employment, except for teaching, and assist properly qualified students in securing it. These agencies, however, can do little for students who are not actually on the ground to negotiate for themselves. It is usually so difficult for a stranger to secure remunerative employment from the start that, in general, no one should come to Berkeley expecting to become self-supporting through the University course, without having on hand at the beginning sufficient funds to cover the expenses of the first year.

SUMMER SESSION

The Summer Session of six weeks is designed for teachers and other persons who are unable to attend the University during the fall and spring sessions. An Announcement of the Summer Session is issued in March of each year and may be obtained by addressing the Recorder of the Faculties, Berkeley, California.

CALENDAR

1915

Aug. 2, Monday—Application for admission and credentials of recommended graduates of accredited high schools to be filed with the Recorder of the Faculties.

Aug. 5, Thursday–Aug. 10, Tuesday—Matriculation examinations at Berkeley for the Academic Colleges; filing of applications for admission to advanced and graduate standing and to special status.

Aug. 13, Friday, Aug. 14, Saturday, Aug. 16, Monday—All officers of instruction in the colleges at Berkeley keep office hours each day, from 9 a.m. to 12 m.

Aug. 13, Friday–Aug. 14, Saturday—Admission certificates issued to intrants; registration of new students, graduate and undergraduate, from 8:30 a.m. to 4:30 p.m., in California Hall.

Aug. 16, Monday—Registration of old students, graduate and undergraduate, 8:30 a.m. to 5 p.m., in California Hall.

Aug. 17, Tuesday—Instruction in all classes begins at 8:07 a.m.

Sept. 1, Wednesday—Last day for filing applications and programmes in candidacy for doctors' degrees, masters' degrees, and teachers' recommendations to be conferred December, 1915, Recorder's Office, California Hall. All signatures required upon these applications must be secured in advance.

Nov. 1, Monday—Last day for filing in final form, with the instructors in charge, theses for Ph.D. to be conferred December, 1915.

Nov. 25, Thursday–Nov. 27, Saturday—Thanksgiving recess of three days.

Dec. 1, Wednesday—Last day for filing in final form, with the instructors in charge, theses for masters' degrees to be conferred December, 1915.

Dec. 8, Wednesday–Dec. 18, Saturday—Mid-year examinations in the Academic Colleges.

Dec. 19, Sunday–Jan. 1, Saturday—Christmas vacation in the Academic Colleges.

1916

Jan. 10, Monday—Registration of students in the Academic Colleges for courses of the second half-year.

Jan. 11, Tuesday—Instruction in all classes begins at 8:07 a.m.

Jan. 26, Wednesday—Last day for filing applications and programmes in candidacy for doctors' degrees, masters' degrees, and teachers' recommendations to be conferred May, 1916, Recorder's Office, California Hall. All signatures required upon the applications must be secured in advance.

Mar. 1, Wednesday—Last day for applications for graduate scholarships for 1916–17.

Mar. 23, Thursday—Charter Day; exercises in the Greek Theatre or Harmon Gymnasium.

Apr. 1, Saturday—Last day for filing in final form, with the instructors in charge, theses for Ph.D. to be conferred May, 1916.

Apr. 29, Saturday—Candidates for Ph.D. file with the Recorder written report of work performed during the year.

May 1, Monday—Last day for filing in final form, with the instructors in charge, theses for masters' degrees to be conferred May, 1916.

May 1, Monday–May 13, Saturday—Annual examinations in the Academic Colleges; annual examinations for seniors begin Thursday, April 27.

May 15, Monday—Class Day.

May 17, Wednesday—The Fifty-third Commencement.

May 18, Thursday–Aug. 9, Wednesday—Vacation of twelve weeks in the Academic Colleges.

June 26, Monday–Aug. 5, Saturday—Summer Session of the Academic Colleges.

Aug. 10, Thursday—Academic year begins.

Aug. 18, Friday, Aug. 19, Saturday, Aug. 21, Monday—All officers of instruction in the colleges at Berkeley keep office hours each day, from 9 a.m. to 12 m; also on Friday and Monday, from 2 to 4:30 p.m.

Aug. 18, Friday–Aug. 19, Saturday—Admission certificates issued to intrants; registration of new students, graduate and undergraduate, from 8:30 a.m. to 4:30 p.m., in California Hall.

Aug. 21, Monday—Registration of old students, graduate and undergraduate, 8:30 a.m. to 5 p.m., in California Hall.

Aug. 22, Tuesday—Instruction in all classes begins at 8:07 a.m.

Sept. 6, Wednesday—Last day for filing applications and programmes in candidacy for doctors' degrees, masters' degrees, and teachers' recommendations to be conferred December, 1916, Recorder's Office, California Hall. All signatures required upon these applications must be secured in advance.

Nov. 1, Wednesday—Last day for filing in final form, with the instructors in charge, theses for Ph.D. to be conferred December, 1916.

Nov. 30, Thursday–Dec. 2, Saturday—Thanksgiving recess of three days.

Dec. 1, Friday—Last day for filing in final form, with the instructors in charge, theses for masters' degrees to be conferred December, 1916.

Dec. 12, Tuesday–Dec. 22, Friday—Mid-year examinations in the Academic Colleges.

Dec. 23, Saturday–Jan. 6, Saturday—Christmas vacation in the Academic Colleges.

UNIVERSITY FARM SCHOOL

The purpose of the University Farm School is to furnish technical training in agriculture to young men who are not prepared or do not wish to pursue a college course in agriculture. It does not prepare nor is it intended to prepare students for entrance to college. The regular course of study is three years. The school year is divided into two semesters of about four months each. The first semester opens September 17, 1915, and closes late in January; the second semester opens February 1, 1916, and closes late in May. Instruction begins promptly at the beginning of each semester; students are expected to be present on the first day and to remain until the close.

The basis of entrance to the Farm School is ability to pursue with profit the assigned course of study and to maintain the prescribed standard of class excellence. Applicants are not admitted below the age of 18 years, unless they are graduates of a high school of recognized standing. Those who are not graduates of a high school are required to pass entrance examinations in English composition and arithmetic. Graduates of an accredited high school, or those who have done any work for which they desire credit, should submit a transcript of their record on blank form secured from the University Farm, showing the work done and grade attained in each subject. This transcript should be properly signed by the principal.

Application for admission should be accompanied by the necessary credentials. They should be sent to the Dean of the University Farm School so as to reach him, if possible, before September 1. Arrangements for board and room on the Farm should also be made in advance. Intrants will not be admitted to full standing until after satisfactory completion of one semester's work.

Evidence of effective vaccination is a condition of entrance.

Evidence of good moral character is required from every applicant.

Practically all of the instructional work taught the second half-year is a continuation of that taught the first half-year and is dependent on it. Unless students have had instruction which is equivalent to that taught the first half-year, it would be better for them to wait and enter at the opening of the school year in September than to enter at the mid-year.

Every student is expected to conduct himself at all times as a gentleman with due respect to the rights of his neighbors and of the community in which he lives, whether in the dormitory or outside.

An association has been formed by the students of the Farm School for the support and control of all student activities. This organization is gradually developing along lines leading to student self-government. Its athletic branch arranges for interscholastic contests in various field sports. A student paper, Agricola, is published annually, at the close of the school year.

Opportunities for earning part of their expenses by labor about the farm and school are much less than the demand for such work. Students who are good workers can often earn from one-fourth to one-half of the necessary expense. A few do better. Students should not enter without having available at least half or two-thirds of the necessary funds for the year's expenses. (See p. 67.)

EXPENSES

Board may be secured in the school dining hall at $20 per month, payable in advance. *Rooms* in the dormitories, one in a room, are $6 or $7 per month, and two in a room $4 or $5 per month each. Dormitory rooms contain necessary furniture, but students must provide all linen and blankets. Room rent covers the weekly laundering of linen. In a portion of the rooms bed linen and blankets are furnished at an additional expense of $2 per month. To a limited extent, board and room may be secured in the village of Davis at substantially the same prices.

Books and regular school supplies cost from $15 to $25 per year. *Special clothing*, such as white suits for creamery and dark overalls and jumpers for shop and field work, cost $1 each, and may be purchased locally if desired.

Fees.—Tuition is free. A registration fee of $5 per semester to cover incidental expenses is charged each student. This is $15 to non-residents of the state.

A late registration fee of $2 is required of every student who applies for registration at any other time than the date specified in the calendar.

A fee of 5 cents per day for late payment of board and room after the 10th of the month is required of each student.

Breakage deposits: A $5 deposit is required of each student. After deducting breakage and loss in laboratories, the balance will be refunded at the end of the semester.

The expenses necessary for an eight-month year vary from $222 to $276, as indicated by the following table:

Table board, per month $20	$160	per year
Room rent, one in room, per month $6 to $7	56	per year
Room rent, two in room, each per month $4 to $5.		
Books and other supplies, $15 to	25	per year
Registration fee, for residents of state	10	per year
Membership in Associated Student Body	5	per year
Necessary expense for residents of state	$256	
Registration fee for non-residents of state additional	20	per year
Necessary expense for non-residents of state	$276	per year

Requirements for graduation are the completion of three years' work of 120 credits in approved subjects, four months' practice in approved commercial work, and presence at the commencement exercises.

UNIVERSITY FARM SCHOOL COURSE OF STUDY

The following study list has been planned after careful consideration of the educational preparation of students entering and the demands which it has been shown they must meet later in practical commercial growing and handling grains, fruits, and live stock as a business, and students will be expected to follow the courses in the order outlined, as most subjects are dependent on the foundation subjects preceding.

Horticultural students will take the horticultural alternatives including †Entomology 01, first semester junior year, and †D. I. 01, second semester senior year.

Animal Husbandry students will take †Ento. 01, second semester junior year, and *Hort. 06, second semester senior year.

NOTE.—The work is estimated in terms of "credits." One credit is equivalent to one hour of classroom with necessary preparation, or two hours of laboratory or practice work. In each semester the left-hand column indicates the number of one-hour periods, the middle column (in parenthesis) the number of two-hour periods, and the right-hand column the number of credits. By multiplying the total of the middle column by 2 and adding this number to the total of the first column the actual number of hours per week devoted to class work is obtained. Third-year subjects are usually not open to first-year students.

† Subjects preceded by † required for graduation.

* Subjects preceded by * required for graduation of students not specializing in horticulture.

STUDY LIST FOR STUDENTS WITHOUT HIGH-SCHOOL CREDIT UNIVERSITY FARM SCHOOL

Freshman Year

First Semester

†A. E. 01. Mechanical Drawing		(2)	2
†A. H. 01. Stock Judging		(2)	2
†Bot. 01. Plant Life	2	(2)	4
†Chem. 01. Elements of Chemistry	2	(2)	4
†E. and E. 01. Agricultural Literature	4		4
†Hyg. 01. Personal Hygiene	1		1
†Math. 01. Arithmetic	4		4
			21

Second Semester

†A. E. 02. Carpentry		(2)	2
†A. H. 02. Stock Judging		(2)	2
†Bot. 02. Economic Plants	2	(2)	4
†Chem. 02. Chemical Analysis	2	(2)	4
†E. and E. 02. Business English	4		4
†Hyg. 02. First Aid	1		1
†Math. 02. Algebra and Geometry	4		4
			21

Junior Year

First Semester

A. E. 03. Building Construction		(2)	2
Or †A. E. 04A. Forging		(2)	
A. H. 03. Breeds and Types	2	(2)	4
Or Hort. 1. Plant Propagation	2	(2)	
†D. I. 01. Elements of Dairying	2	(2)	4
†Math. 03. Applied Mathematics	4		4
P. H. 01. Breeds and Housing	2	(2)	4
Or †Ento. 01. Insect Pests	2	(2)	
†So. 01. Soils	2	(2)	4
			22

Second Semester

†Agr. 02. Field Crops	2	(2)	4
†A. E. 04. Forging		(2)	2
Or A. E. 03A. Building Construction		(2)	
A. H. 04. Breeds and Types	2	(2)	4
Or Hort. 02. Fruit Growing	2	(2)	
D. I. 02. Dairy Practice	2	(2)	4
Or Oler. 02. Vegetable Gardening	2	(2)	
†Ento. 01A. Insect Pests	2	(2)	4
Or Ento. 02. Bee Culture	2	(2)	
Or Hort. 06. General Horticulture	2	(2)	
P. H. 02. Care and Feeding	2	(2)	4
Or Math. 04. Physics and Trigonometry	4		
			22

Senior Year

First Semester

†Agr. 03. Farm Management	2	(2)	4
†A. E. 05. Farm Machinery	2	(2)	4
A. H. 05. Stock Management	2	(2)	4 or 2
Or D. I. 03. Market Milk	2	(2)	
Or Hort. 03. Fruit Marketing	1	(1)	
†Math. 05. Surveying	2	(2)	4
V. S. 01. Veterinary Science	2	(2)	4
Or Vit. 01. Viticulture	2	(2)	
Or P. H. 01. Breeds and Housing	2	(2)	
Or V. S. 03. Bacteriology	2	(2)	
			20-18

Second Semester

A. H. 06. Feeding	4		4
Or Hort. 04. Orchard Practice	2	(2)	
D. I. 04. Dairy Manufactures	2	(2)	4
Or Hort. 08. Citrus Culture	2	(2)	
Or P. H. 04. Incubation and Brooding		(4)	
†Irrig. 02. Irrigation Practice	2	(2)	4
†E. and E. 05A. Rural Economics	4		4
*Hort. 06. General Horticulture	2	(2)	4
Or Vit. 02. Viticulture Practice	2	(2)	
Or Oler. 04. Advanced Vegetable Gardening	2	(2)	
Or P. H. 02. Care and Feeding	2	(2)	
			20

STUDY LIST FOR STUDENTS HAVING HIGH-SCHOOL CREDIT IN ENGLISH, MATHEMATICS AND CHEMISTRY

UNIVERSITY FARM SCHOOL

JUNIOR YEAR

First Semester

†A. E. 01. Mechanical Drawing		(2)	2
Or A. E. 03. Building Construction		(2)	
Or A. E. 04A. Forging		(2)	
†A. H. 01. Stock Judging		(2)	2
†Bot. 01. Plant Life	2	(2)	4
Or E. and E. 05. Rural Economics	4		
†D. I. 01. Elements of Dairying	2	(2)	4
Or Hort. 01. Plant Propagation	2	(2)	
†Math. 03. Applied Mathematics	4		4
Or P. H. 01. Breeds and Housing	2	(2)	
Or Ento. 01. Insect Pests	2	(2)	
†Hyg. 01. Personal Hygiene	1		
†So. 01. Soils	2	(2)	4
			20

Second Semester

†Agr. 02. Field Crops	2	(2)	4
†A. H. 02. Stock Judging		(2)	2
†Bot. 02. Economic Plants	2	(2)	4
Or Bot. 04. Farm Botany	2	(2)	
D. I. 02. Dairy Practice	2	(2)	4
Or Hort. 02. Fruit Growing	2	(2)	
†Ento. 01. Insect Pests	2	(2)	4 or 2
Or †A. E. 04. Forging		(2)	
Or A. E. 03. Building Construction		(2)	
Math. 04. Physics and Trigonometry	4		4
Or P. H. 02. Care and Feeding	2	(2)	
Or Oler. 02. Vegetable Gardening	2	(2)	
			22-20

SENIOR YEAR

First Semester

†Agr. 03. Farm Management	2	(2)	4
A. H. 03. Breeds and Types	2	(2)	4 or 2
Or †D. I. 01. Elements of Dairying	2	(2)	
Or Hort. 03. Fruit Marketing	1	(1)	
†A. E. 05. Farm Machinery	2	(2)	4
A. H. 05. Stock Management	2	(2)	
Or P. H. 03. Fancy Judging	2	(2)	
Or V. S. 01. Veterinary Science	2	(2)	
Or V. S. 03. Bacteriology	2	(2)	
Or D. I. 03. Market Milk	2	(2)	
Or Vit. 01. Viticulture	2	(2)	
†Math. 05. Surveying	2	(2)	
			20-18

Second Semester

A. H. 04. Breeds and Types	2	(2)	4
Or Vit. 02. Viticulture Practice	2	(2)	
A. H. 06. Feeds and Feeding	4		4
Or Hort. 08. Citrus Culture	2	(2)	
†E. and E. 05A. Rural Economics	4		4 or 2
Or †A. E. 08. Advanced Farm Machinery	1	(1)	
Or Math. 06. Advanced Surveying	1	(1)	
Or P. H. 04. Incubation and Brooding		(4)	
Or D. I. 04. Dairy Manufactures	2	(2)	
Or Oler. 02. Vegetable Gardening	2	(2)	
Or Oler. 04. Advanced Vegetable Gardening	2	(2)	
*Hort. 06. General Horticulture	2	(2)	4
Or Hort. 04. Orchard Practice	2	(2)	
†Irrig. 02. Irrigation Practice	2	(2)	4
			20-18

DESCRIPTION OF COURSES OF STUDY IN THE UNIVERSITY FARM SCHOOL

AGRICULTURAL ENGINEERING

Professor DAVIDSON, Mr. KOEBER, Mr. BELTON, Mr. INGRIM

†A. E. 01. **Mechanical Drawing.** First semester. 2 units

Two laboratories.

Practice in drawing working plans and details of construction of farm buildings.

†A. E. 02. **Carpentry.** Second semester. 2 units

Two laboratories.

Use of tools in bench work; construction of small articles such as tables, cases, etc.

A. E. 03. **Building Construction.** First semester. 2 units

Two laboratories.

Prerequisite: A. E. 01.

Practice in making building foundations, cutting frames, rafters and other timbers; erection of small buildings, concrete work.

†A. E. 04. **Forging.** Second semester. 2 units

Two laboratories.

Prerequisite to A. E. 05.

Hammering, welding and tempering; farm repair work, such as plow sharpening, harrow teeth sharpening, tire and axle setting; making hooks, clevises, bolts, etc.

†A. E. 05. **Farm Machinery.** First semester. 4 units

Two lectures; two laboratories.

Prerequisite: A. E. 04 and Math. 03.

Principles underlying the construction, adjustment, operation and repair of common tillage, harvesting, and power machines, including gas engines, tractors, and pumps. Practice in setting up, operating, and testing each. Babbiting, shaft erecting, belt splicing, and other simple exercises. Cost of various farm machines and the expense of operating them.

†A. E. 08. **Advanced Farm Machinery.** Second semester. 2 units

One lecture; one laboratory.

Study of special problems by arrangement.

AGRONOMY

Professor GILMORE, Assistant Professor R. L. ADAMS, Assistant Professor MADSON, Mr. HENDRY.

†Agr. 02. **Field Crops.** Second semester. 4 units

Two lectures; two laboratories.

Prerequisite: So. 01, and preceded or accompanied by Bot. 02 or 04.

Prerequisite to Agr. 03.

Principal types and varieties, methods of growing, handling, and improving common grains, forage, and root crops. Laboratory practice in judging crops and testing seeds for purity.

†Agr. 03. **Farm Management.** First semester. 4 units

Two lectures; two discussion laboratories.

Prerequisite: So. 01 and 02.

Senior standing required.

A study of the business principles of farming, the organization and conduct of a farm, the planning of cropping systems, the handling of capital, labor, stock, and machinery.

ANIMAL HUSBANDRY

Professor TRUE, Assistant Professor THOMPSON, Assistant Professor MILLER, Mr. DOLCINI, Mr. VOORHIES, Mr. BURGE.

†A. H. 01. **Stock Judging.** First semester. 2 units

Two laboratories.

Required for graduation.

Includes the judging of different market classes of beef, cattle, and hogs, both lard and bacon.

†A. H. 02. **Stock Judging.** Second semester. 2 units

Two laboratories.

Required for graduation.

Includes judging of different market classes of light and heavy horses, sheep, both mutton and wool, and dairy cattle.

A. H. 03. **Breeds and Types.** First semester. 4 units

Two lectures; two laboratories.

Judging of representatives of different breeds of cattle and hogs according to their official standards; a study of their origin, history, characteristics, and adaptability to various conditions. Prerequisite: A. H. 01.

A. H. 04. **Breeds and Types.** Second semester. 4 units

Two lectures; two laboratories.

Judging of representatives of different breeds of horses, sheep, and dairy cattle according to their official standards; a study of their origin, history, characteristics, and adaptability to various conditions. Prerequisite: A. H. 02.

A. H. 05. **Stock Management.** First semester. 4 units

Two lectures; two laboratories.

The practical care, feeding, and management of all classes of stock, with practice at barns. Prerequisite: A. H. 01 and 02.

A. H. 06. **Feeds and Feeding.** Second semester. 4 units

Four lectures.

Feeding stuffs as related to the economic production of meat, wool, milk, and work. Methods of preparing and feeding of all classes and ages of live stock. Prerequisite: A. H. 01 and 02.

BOTANY

Mr. Wight

†Bot. 01. **Plant Life.** First semester. 4 units

Two lectures; two laboratories.

Prerequisite to Bot. 02.

Lectures, experiments, and exercises showing the formation, structure, and necessary conditions for the growth of plants; seed germination tests; collection and identification of weed seeds, and methods of controlling weeds.

†Bot. 02. **Economic Botany.** Second semester. 4 units

Two lectures; two laboratories.

Prerequisite: Bot. 01.

Fungus diseases and identification of economic plants and weeds. Each student is expected to develop a garden plot illustrating the botanical relationship of several groups of plants and methods of plant growth.

Bot. 04. **Farm Botany.** Second semester. 4 units

Two lectures; two laboratories.

Adapted to needs of students receiving credit for high school botany.

CHEMISTRY

Mr. Arnold

†Chem. 01. **Elements of Chemistry.** First semester. 4 units

Two lectures; two laboratories.

Prerequisite to Chem. 02.

Principles of chemistry with their application to such matters as the action of sulphur in bleaching fruit, of disinfectants, of fertilizers.

†Chem. 02. **Chemical Analysis.** Second semester. 4 units

Two lectures; two laboratories.

Prerequisite: Chem. 01.

Continuation of Chem. 01; experiments with soils, alkalis, food products, and other substances having particular reference to farm practice.

ENGLISH AND ECONOMICS

Mr. Kelley

†E. and E. 01. **Agricultural Literature.** First semester. 4 units

Four lectures.

Required for graduation.

Introduction to technical literature, with emphasis on accuracy of understanding; practice in taking lecture notes, in summarizing agricultural publications, and in preparing reports; increasing familiarity with technical terms; debating on agricultural and current topics.

†E. and E. 02. **Business English.** Second semester. 4 units

Four lectures.

Required for graduation.

Training in business correspondence, with emphasis on form, usage, spelling, punctuation, and choice of words; practice in oral and written presentation of student's own thought.

E. and E. 03. **English Practice.** First semester.

Hours and units by arrangement.

Elective, but may be required of candidates for graduation whose written work in technical courses is poor.

†E. and E. 05. **Rural Economics.** First semester. 4 units

Four lectures.

Required for graduation.

Elements of Economics; the farmer's business problems in relation to land, markets, banking, and credits; rural social problems and the fundamentals of good citizenship.

†E. and E. 05*a*. **Rural Economics.** Second semester. 4 units

Four lectures.

Required for graduation.

Elements of Economics; the farmer's business problems in relation to land, markets, banking, and credits; rural social problems and the fundamentals of good citizenship.

DAIRY INDUSTRY

Assistant Professor Davis, Mr. Baird, Mr. Douglass

†D. I. 01. **Elements of Dairying.** First semester. 4 units

Two lectures; one 4-hour laboratory.

Prerequisite: Chem. 01 and 02.

Required for graduation.

A general study of the composition, properties, care, and handling of milk; principles and application of the Babcock test and acidity tests; construction and operation of cream separators; ripening and churning of cream under farm conditions.

D. I. 02. **Dairy Practice.** Second semester. 4 units

Two lectures; one 4-hour laboratory.

Prequisite: D. I. 01.

A study of the commercial tests for butter fat, acidity, moisture, salt, and adulteration of dairy products; principles and practice of creamery butter making; pasteurization, ripening, and churning of cream; propagation of starters; use of power separators; scoring of dairy products; study and practice in making California and Cheddar types of cheese.

D. I. 03. **Market Milk and Fancy Cheese Making.** First semester. 4 units

Two lectures; one 4-hour laboratory.

Prerequisite: D. I. 02.

Conditions affecting quality of milk for direct consumption; requisites for producing different grades of milk; tests for quality and adulteration; pasteurizing, standardizing, and bottling milk for distribution; inspecting dairies and milk plants; principles of and practice in the preparation of soft and fancy types of cheese.

D. I. 04. **Dairy Manufactures.** Second semester. 4 units

Two lectures; one 4-hour laboratory.

Prerequisite: D. I. 02.

Advanced work in creamery butter making and cheese making; creamery accounting; creamery management and organization; creamery machinery and dairy mechanics; instruction and practice in the making of plain and fancy ice cream, ices, and sherbets.

ENTOMOLOGY

Professor Woodworth, Mr. Nickels

†Ent. 01. **Insect Pests.** First semester. 4 units

Two lectures; two laboratories.

Required for graduation.

The structure and classification and life history of insect pests commonly attacking orchard and field crops and farm animals, and the remedies available for their control.

Ent. 02. **Bee Keeping.** Second semester. 4 units

Two lectures; two laboratories.

Elective.

Practice in the handling of bees, and a study of the apparatus used in modern bee keeping.

HORTICULTURE

Professor Stubenrauch, Associate Professor Howard, Assistant Professor Taylor, Mr. Hendrickson.

Hort. 01. **Plant Propagation.** First semester. 4 units

Two lectures; two laboratories.

Prerequisites: Bot. 02 or 04, or accompanied by Bot. 01.

Principles and practices employed in the propagation or multiplication of cultivated plants by means of grafting, budding, layering, cuttings, seeds, separation, and division. Practice work in all the common nursery operations. Observations in the orchard.

Hort. 02. **Fruit Growing.** Second semester. 4 units

Two lectures; two laboratories.

Prerequisites: Hort. 01 and Bot. 02 or 04, accompanied by Bot. 02 or 04.

Discussion of the general principles of fruit growing. Location of orchards, planting, cultivation, fertilization, irrigation, pruning, spraying, etc. Seasonable practice work in all of the principal orchard operations.

Hort. 03. **Fruit Marketing.** First semester. 2 units

One lecture; one laboratory.

Prerequisites: Hort. 01 and 02.

General principles underlying the harvesting, grading, packing, shipping, precooling, storing, and marketing of fruits. A general study of the practices involved in the handling and movement of fruit crops and their utilization. A study of fruit varieties, including description, identification, scoring, and judging.

Hort. 04. **Orchard Practice.** Second semester. 4 units

Two lectures; two laboratories.

Prerequisite: Hort. 01 and 02.

A detailed study of the deciduous tree fruits, their classification, propagation, planting, management. Care of orchards, adaptability of tree fruits with special reference to California conditions. Attention will also be given to small fruits. Extensive practice work in the University Farm orchards.

*Hort. 06. **General Horticulture.** Second semester, senior year. 4 units

Two lectures; two laboratories.

Required for graduation of students not specializing in Horticulture.

A general survey of the more important principles and practices involved in the growing of fruit trees and the production of fruit crops, with special reference to California conditions. Not open to students majoring in Horticulture.

CITRICULTURE

Professor Coit, Assistant Professor Condit

Hort. 08. **Citriculture.** Second semester. 4 units

Two lectures; two laboratories.

Prerequisites: Bot. 01 and 02 and Hort. 01 and 03.

This course covers in detail the history, propagation, culture, and handling of citrus fruits, with practical work in planting seeds and seedlings, budding nursery stock, balling trees, use of cover crops, operating orchard heaters, judging varieties, irrigating orchard trees, and applying fertilizers. Considerable time is spent in the study of the fig, olive, avocado, loquat, persimmon and other semitropical fruits.

HYGIENE

Dr. W. E. Bates

†Hyg. 01. **Personal Hygiene.** First semester. 1 unit

One lecture.

Prerequisite to Hyg. 02.

Lectures on personal hygiene, including the importance of ventilation and exercise; human anatomy and physiology; rural hygiene; sexual hygiene, and control of insect carriers of disease.

†Hyg. 02. **First Aid.** Second semester. 1 unit

One lecture.

Prerequisite: Hyg. 01.

A course in the recognition and emergency treatment of common accidents. Students completing this course will, if desired, be recommended to the American Red Cross for First Aid Certificate. (Fee for certificate, 50 cents, which must accompany recommendation.)

IRRIGATION

Assistant Professor Beckett, Mr. Israelson

†Irrig. 02. **Irrigation Practice.** Second semester. 4 units

Two lectures; one 4-hour laboratory.

Prerequisites: Math. 03 and Soils 01, or Soils 01 may accompany.

Preparation of land for irrigation; the requirements and application of water to field crops and orchards. Design and construction of farm laterals, delivery gates, reservoirs, concrete pipe lines and pumping units, etc. Methods and devices for measurement of water. Simple problems of drainage.

MATHEMATICS

Mr. Titus

†Math. 01. **Arithmetic.** First semester. 4 units

Four lectures.

Prerequisite to Math. 02, 03, and 04.

Application of arithmetic through fractions and percentage to the estimating of building materials, averages, creamery dividends; meaning and use of formulas.

†Math. 02. **Algebra and Geometry.** Second semester. 4 units

Four lectures.

Prerequisite: Math. 01.

Fundamental principles and formulas with illustrative applications.

†Math. 03. **Applied Mathematics.** First semester. 4 units

Four lectures.

Prerequisite: Math. 02.

Prerequisite to A. E. 05 and Irrig. 02.

Areas and volumes, capacities of reservoirs and ditches, computing concrete work, computation with logarithms, etc.

Math. 04. **Physics and Trigonometry.** Second semester. 4 units
Two lectures; two laboratories.
Prerequisite: Math. 03.
Prerequisite to A. E. 08 and Math. 06.
Problems in land measurement; principles of the ''simple machine''; pump and engine problems; flow of water in pipes and ditches; work and power problems, etc.

†Math. 05. **Surveying.** First semester. 4 units
Two lectures; two laboratories.
Prerequisite: Math. 03.
Prerequisite to Irrig. 02.
Required for graduation.
Study of the principles of surveying and their application to irrigation, especially profile leveling and contour mapping.

Math. 06. **Advanced Surveying.** Second semester. 2 units
One lecture; one laboratory.
Prerequisite: Math. 05.
Transit work, cross-sectioning, etc.

OLERICULTURE

Assistant Professor ROGERS

Oler. 02. **Vegetable Gardening.** Second semester. 4 units
Two lectures; two laboratories.
Prerequisite: Bot. 02.
Principles of vegetable gardening and methods of fertilizing, planting, cultivating, irrigating, and handling the common vegetables for home use or market, and adaptation to intercropping in young orchards.

Oler. 04. **Special Crops.** Second semester. 4 units
Two lectures; two laboratories.
Prerequisite: Oler. 02.
Advanced work with special crops and problems.

POULTRY HUSBANDRY

Associate Professor DOUGHERTY, Mr. LLOYD, Mr. HAVENS

P. H. 01. **Breeds and Housing.** First semester. 4 units
Two lectures; two laboratories.
Prerequisite: Math. 02, Eng. 02; A. E. 01, or accompanied by A. E. 01.
Full junior standing required.
A study of the more popular breeds and varieties, their distinctive characteristics and utility qualities; the laws of breeding and their

application to the building up of flocks of heavy layers or choice meat fowls; natural and artificial incubation and brooding; the selection of fowls for constitutional vigor; selecting, grading, and studying the structure of eggs; poultry house construction.

P. H. 02. **Feeding and Management.** Second semester. 4 units

Two lectures; two laboratories.

Prerequisite: P. H. 01, and preceded or accompanied by Chem. 02.

This course deals with the selection and laying out of a poultry farm; the making of poultry appliances such as trap nests, mash hoppers, fattening crates, catching coops, etc.; anatomy and physiology; caponizing; disease; parasites and sanitation; killing, picking, and dressing fowls for market; marketing; the general care and management of a poultry farm.

P. H. 03. **Fancy Judging.** First semester. 2 units

Two laboratories.

Prerequisite: P. H. 02; not given if selected by less than six students.

Full senior standing required.

Judging the principal breeds of poultry for fancy and utility points both by the score card and comparison methods; fitting fowls for exhibition.

P. H. 04. **Incubation, Brooding, and Pen Practice.** Second semester. 4 units.

Hours to be arranged. Morning, noon, and night work every day, including Sunday, if necessary.

Prerequisite: P. H. 02.

Full senior standing required.

A practice course in operating incubators, keeping records. hatching eggs, brooding chicks, caring for pens and mature fowls.

SOILS

Professor Shaw, Mr. Smith

†So. 01. **Soils.** First semester. 4 units

Two lectures; two laboratories.

Prerequisites: Chem. 01 and 02.

Prerequisite to Agr. 02.

This course treats of the origin and formation of soils; their relation to heat, moisture, and air; plant food constituents and alkalis; the effect of drainage, irrigation, mulches, fertilizers, crop rotations, the renovating of worn-out soils, and methods of moisture determination. Students are urged to familiarize themselves in advance with ''The Soil,'' by Lyon and Fippin, or ''Soils,'' by Hilgard.

VETERINARY SCIENCE

Dr. Haring, Dr. Hayes

V. S. 01. **Veterinary Science.** First semester. 4 units

Two lectures; two laboratories.

Prerequisites: A. H. 01 and 02.

Senior standing required.

This course includes the essentials of anatomy, physiology, and diseases of farm animals; the prevention, recognition, and control of common diseases, together with the study of minor surgery necessary on the ranch.

V. S. 03. **Bacteriology.** First semester. 4 units

Two lectures; two laboratories.

Senior standing required.

A general study of bacteria in their relation to diseases of man and animals, and to care and handling of milk.

VITICULTURE

Professor Bioletti, Mr. Flossfeder

Vit. 01. **Vineyard Organization.** First semester. 4 units

Two lectures; two laboratories.

Classification and structure of the vine; pruning and training of vines; location, laying out, and planting of vineyards; visits to leading vineyards.

Vit. 02. **Vineyard Practice.** Second semester. 4 units

Two lectures; two laboratories.

Prerequisite: Vit. 01.

Propagation of vines, bench grafting, callusing, nursery work; resistant vines, diseases of the vine and methods of control; insect pests and methods of control; making raisins and vinegar; trips in the field.

UNIVERSITY FARM SCHOOL CALENDAR*

1915

Sept. 17, Friday—Entrance examination and registration of new students.

Sept. 18, Saturday—Registration continued.

Sept. 20, Monday—Registration of Juniors and Seniors.

Sept. 21, Tuesday—Class work begins; Assembly for all students, 11 a.m.

Oct. 4, Monday—Farmers' Short Courses open; Assembly, 7:30 p.m.

Nov. 24, Wednesday—Thanksgiving recess begins, 12 m.

Nov. 29, Monday—Class work resumed, 11 a.m.

Dec. 23, Thursday—Christmas recess begins, 12 m.

1916

Jan. 4, Tuesday—Class work resumed, 11 a.m.

Jan. 10, Monday—Registration of University students.

Jan. 11, Tuesday—Instruction in University classes begins; Assembly, 8:10 a.m.

Jan. 24, Monday–Jan. 28, Friday—Examinations.

Jan. 29, Saturday, Jan. 31, Monday, Feb. 1, Tuesday—Registration.

Feb. 1, Tuesday—Second semester begins; Assembly for all students, 11 a.m.

May 5, Friday—Examinations in University subjects, end at noon.

May 15, Monday–May 18, Thursday—Examinations in University Farm School subjects.

May 19, Friday—Commencement, 2 p.m.

Sept. 15, Friday–Sept. 16, Saturday—Entrance examinations and registration of new students.

Sept. 18, Monday—Registration of Juniors and Seniors.

Sept. 19, Tuesday—Class work begins; Assembly for all students, 11 a.m.

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* For University of California Calendar see page 64.

UNIVERSITY OF CALIFORNIA BULLETIN

A SERIES IN THE ADMINISTRATIVE BULLETINS
OF THE UNIVERSITY OF CALIFORNIA

Entered July 1, 1911, at the Post Office at Berkeley, California,
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Issued monthly from July to March, and twice a month from
April to June

These Bulletins include:

- The Circular of Information, Academic Departments.
- The Annual Announcement of the Summer Session.
- The Annual Announcement of the Colleges of Dentistry, Law, Medicine, and Pharmacy.
- The President's Annual Report.
- The Prospectus of the College of Agriculture.

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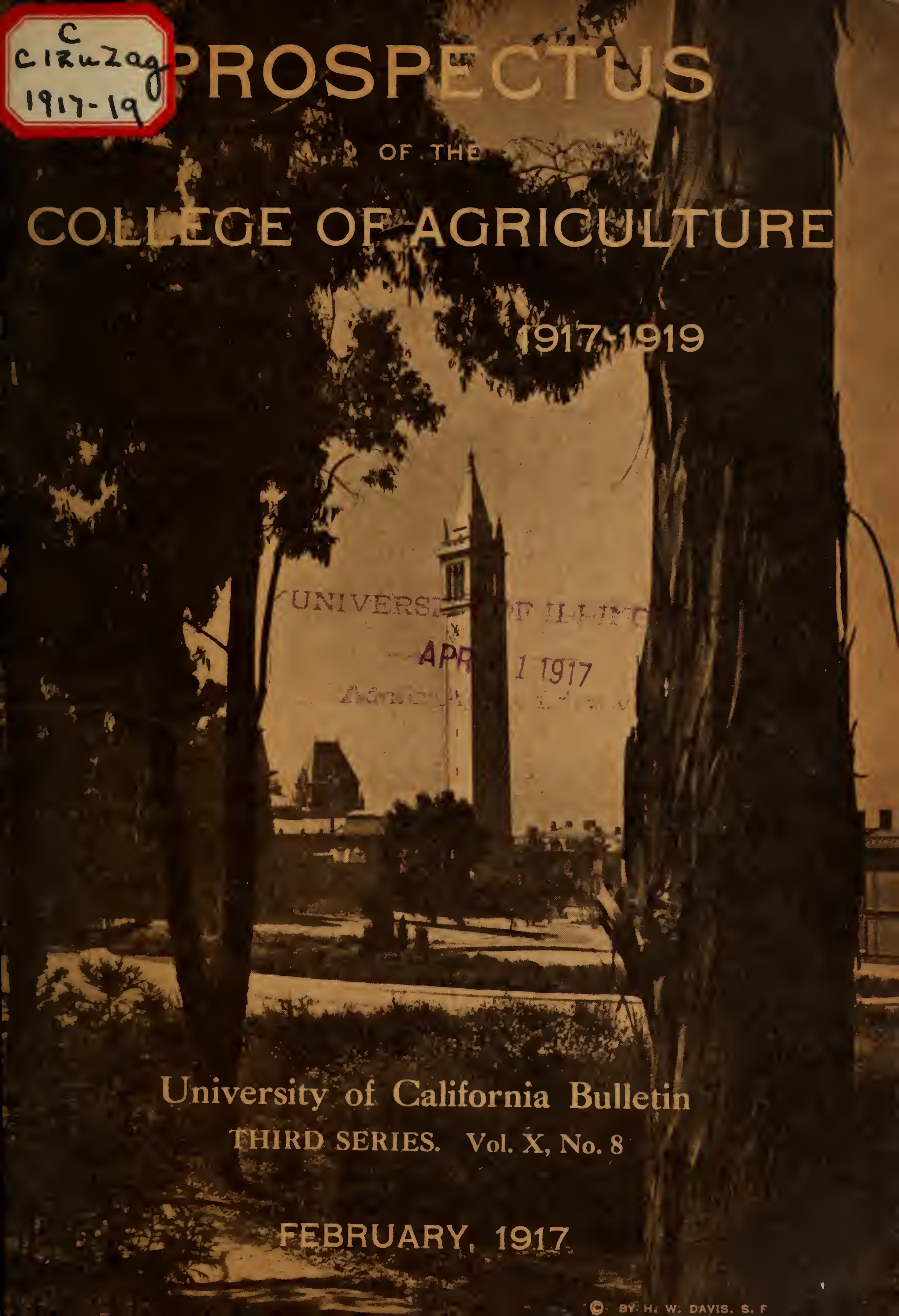
1917-19

PROSPECTUS

OF THE

COLLEGE OF AGRICULTURE

1917-1919



UNIVERSITY OF ILLINOIS
APR 1 1917

University of California Bulletin

THIRD SERIES. Vol. X, No. 8

FEBRUARY, 1917

© BY H. W. DAVIS, S. F.

Administrative Bulletins of the University of California

1917–18. No. 12

ORGANIZATION OF THE UNIVERSITY

The University of California is an integral part of the public educational system of the State. As such it completes the work begun in the public schools. Through aid from the State and the United States, and by private gifts, it furnishes instruction in literature and in science, and in the professions of engineering, art, law, medicine, dentistry, and pharmacy. In the Colleges of Letters and Science, Commerce, Agriculture, and Engineering these privileges are offered without charge for tuition, to all residents of California who are qualified for admission. Non-residents of California are charged a tuition fee of ten dollars each half-year. In the professional colleges, except that of Law, tuition fees are charged. The instruction in all the colleges is open to all qualified persons, without distinction of sex. The Constitution of the State provides for the perpetuation of the University, with all its departments.

Letters of inquiry concerning the College of Agriculture should be addressed to the *Dean of the College of Agriculture, Berkeley, California.*

For the following circulars of information concerning the several colleges and departments of the University apply to the *Recorder of the Faculties, University of California, Berkeley, California.*

1. The Circular of Information, Academic Departments (College of Letters and Science and Engineering, and the first two years of Medicine). Containing general information about the University, its organization, government, faculties, requirements for admission both to graduate and undergraduate status, requirements for degrees and teachers' recommendations, expenses.

2. The Annual Announcement of Courses of Instruction in the Academic Colleges. Published annually in July. Price 10 cents. Sent by mail by the Recorder of the Faculties for 15 cents.

3. The Announcement of the Summer Session in the Academic Colleges, published annually in March. Sent free.

UNIVERSITY OF CALIFORNIA

PROSPECTUS

OF THE

COLLEGE OF AGRICULTURE

1917-1919

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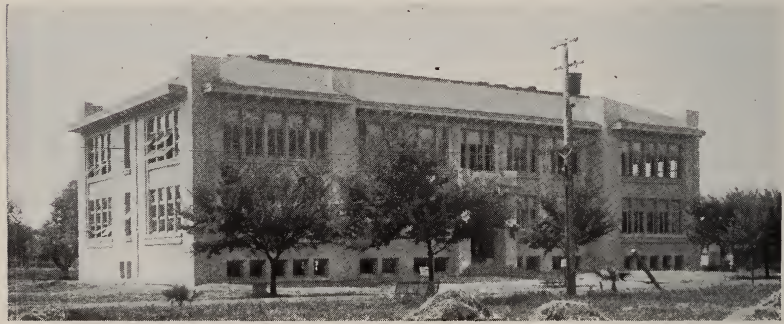
JAN 28 1921

PUBLISHED BY THE
UNIVERSITY OF CALIFORNIA
BERKELEY

The headquarters of the College of Agriculture, University of California, located at Berkeley, in Alameda County. New students enter on August 17, 1917, and August 16, 1918.



The Classroom Building at the University Farm School, located at Davis, in Yolo County. New students enter on September 14, 1917, and September 13, 1918.

AGRICULTURAL STAFF

Benjamin Ide Wheeler, Ph.D., LL.D., President of the University of California.
Thomas Forsyth Hunt, D.Agr., D.Sci., Dean of the College of Agriculture; Professor of Agriculture; Director of the Agricultural Experiment Station.
Frank Adams, M.A., Professor of Irrigation Investigations.
R. L. Adams, M.S., Assistant Professor of Agronomy.
F. W. Albro, B.S., Assistant in Nutrition.
E. O. Amundsen, B.S., Assistant in Agricultural Extension, Placer County.
W. H. Arnold, B.S., Instructor in Chemistry, Davis.
H. J. Baade, B.S., Instructor in Agricultural Extension, Napa County.
E. B. Babcock, M.S., Professor of Genetics.
H. S. Baird, B.S., Instructor in Dairy Industry, Davis.
G. Barovetto, Field Assistant in Viticulture, Davis.
J. T. Barrett, Ph.D., Professor of Plant Pathology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
L. D. Batchelor, Ph.D., Associate Professor of Plant Breeding in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
W. E. Bates, M.D., Lecturer in Hygiene, Davis.
J. R. Beach, D.V.M., Assistant in Veterinary Science.
S. H. Beckett, B.S., Assistant Professor of Irrigation Practice, Davis.
H. L. Belton, Instructor in Shopwork, Davis.
E. B. Bisbee, B.S., Assistant in Dairy Industry, Davis.
F. T. Bioletti, M.S., Professor of Viticulture and Enology.
Miss Agnes E. Brown, A.B., Librarian, Davis.
Donald Bruce, M.F., Assistant Professor of Forestry.
V. C. Bryant, M.S., Assistant Professor of Agricultural Extension.
Mrs. D. L. Bunnell, Librarian.
J. S. Burd, B.S., Professor of Agricultural Chemistry.
O. F. Burger, D.Sc., Instructor in Plant Pathology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
D. H. Carey, B.S., Instructor in Floriculture; Superintendent of Greenhouses and Gardens.
A. H. Christiansen, B.S., Instructor in Agricultural Extension, Humboldt County.
A. W. Christie, M.S., Assistant in Agricultural Chemistry.
Miss Lillian D. Clark, Instructor in Agricultural Extension.
W. T. Clarke, B.S., Professor of Agricultural Extension and Superintendent of Farmers' Institutes.
R. E. Clausen, Ph.D., Assistant Professor of Genetics.
J. E. Coit, Ph.D., Professor of Citriculture.
G. A. Coleman, M.A., Instructor in Entomology and Curator of the Agricultural Museum.
I. J. Condit, B.S., Assistant Professor of Citriculture.
C. M. Conner, B.S., Instructor in Agricultural Extension, Stanislaus County.
B. H. Crocheron, M.S.A., Associate Professor of Agricultural Extension.
W. V. Cruess, B.S., Assistant Professor of Zymology.
J. B. Davidson, A.E., Professor of Agricultural Engineering, Davis.
I. F. Davis, B.S., Assistant in Agricultural Extension.
W. C. Dean, B.S., Assistant in Soil Technology.
S. L. Denning, B.S., Instructor in Dairy Husbandry, Davis.
J. A. Denny, Foreman in Cereal Work, Davis.
E. R. deOng, B.S., Assistant in Entomology, Davis.

W. H. DORE, B.S., Assistant Chemist in Fertilizer Control.
J. E. DOUGHERTY, B.S., Associate Professor of Poultry Husbandry, Davis.
P. I. DOUGHERTY, B.S., Assistant in Agricultural Extension, Imperial County.
C. F. ELWOOD, B.S., Instructor in Agricultural Education.
E. O. ESSIG, M.S., Assistant Professor of Entomology.
H. S. FAWCETT, M.S., Associate Professor of Plant Pathology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
L. J. FLETCHER, B.S., Instructor in Agricultural Engineering, Davis.
F. C. H. FLOSSFEDER, Instructor in Viticulture and Superintendent of Grounds, Davis.
Mrs. M. N. FOWLER, B.S., Assistant in Agricultural Extension.
S. B. FREEBORN, B.S., Instructor in Entomology.
H. B. FROST, Ph.D., Instructor in Plant Breeding in the Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
W. F. GERICKE, M.S., Assistant Professor of Soil Chemistry.
J. W. GILMORE, M.S.A., Professor of Agronomy.
H. I. GRASER, B.S., Assistant in Agricultural Extension.
J. F. GRASS, Jr., Assistant in Agricultural Extension.
G. P. GRAY, M.S., Instructor in Insecticides and Chemist in Insecticide Laboratory.
J. W. GREGG, B.S., Professor of Landscape Gardening and Floriculture.
R. M. HAGEN, B.S., Assistant in Agricultural Extension.
H. M. HALL, Ph.D., Associate Professor of Economic Botany.
C. M. HARING, D.V.M., Professor of Veterinary Science.
R. E. HARMON, B.S., Instructor in Physical Education, Davis.
E. J. HAUSER, B.S., Assistant in Agricultural Extension.
F. M. HAYES, D.V.M., Assistant Professor of Veterinary Science, Davis.
W. H. HEILEMANN, M.S., Instructor in Agricultural Extension, Glenn County.
A. H. HENDRICKSON, B.S., Instructor in Pomology.
G. W. HENDRY, B.S., Instructor in Agronomy.
W. B. HERMS, M.A., Associate Professor of Parasitology.
P. L. HIBBARD, B.S., Chemist in Fertilizer Control.
Miss CORA J. HILL, B.L., Assistant in Dairy Testing.
F. E. HILL, Foreman, Forestry Station, Santa Monica.
D. R. HOAGLAND, M.S., Assistant Professor of Agricultural Chemistry.
W. T. HORNE, B.Sc., Associate Professor of Plant Pathology.
W. L. HOWARD, Ph.D., Associate Professor of Pomology, Davis.
W. G. HUMMEL, M.S., Associate Professor of Agricultural Education.
THOMAS FRANCIS HUNT, B.S., Assistant Professor of Agricultural Extension; Assistant Superintendent of Farmers' Institutes.
R. C. INGRIM, Instructor in Shopwork, Davis.
J. JACOBSEN, Foreman of Repairs, Davis.
M. E. JAFFA, M.S., Professor of Nutrition.
Miss KATHERINE JONES, B.S., Assistant in Landscape Gardening.
T. R. KELLEY, A.B., Instructor in English and Economics, Davis.
W. P. KELLEY, Ph.D., Professor of Agricultural Chemistry in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
O. J. KERN, Assistant Professor of Agricultural Education.
G. C. KREUTZER, B.S., Instructor in Agricultural Extension, Kern County.
E. J. LEA, M.S., Associate Professor of Nutrition.
C. B. LIPMAN, Ph.D., Professor of Soil Chemistry and Bacteriology.
W. E. LLOYD, B.S., Instructor in Poultry Husbandry, Davis.
R. H. LOUGHRIDGE, Ph.D., Professor of Agricultural Chemistry (Emeritus).
Miss ANNA M. LUTE, A.B., Scientific Assistant, U. S. Department of Agriculture (in co-operation).
B. A. MADSON, B.S.A., Assistant Professor of Agronomy, Davis.
D. E. MARTIN, B.S., Assistant in Soil Chemistry and Bacteriology.

D. T. Mason, M.S., M.F., Professor of Forestry.
H. A. Mattill, Ph.D., Assistant Professor of Nutrition.
T. C. Mayhew, B.S., Instructor in Agricultural Extension, Madera County.
Elwood Mead, D.E., Professor of Rural Institutions.
Woodbridge Metcalf, M.S., Assistant Professor of Forestry.
W. M. Mertz, Superintendent of Cultivations, Riverside.
M. R. Miller, B.S., Assistant Chemist in Insecticide Control.
R. F. Miller, M.S., Assistant Professor of Animal Husbandry, Davis.
J. W. Mills, Assistant in Agricultural Extension, Solano County.
J. N. Moore, Foreman, Forestry Station, Chico.
D. N. Morgan, B.S., Assistant Professor of Agriculture; Assistant to the Director.
Walter Mulford, F.E., Professor of Forestry.
J. W. Nelson, B.S., Assistant Professor of Soil Technology.
Carl Nichols, M.S., Instructor in Agricultural Extension.
W. E. Packard, M.S., Assistant Professor of Agronomy, Imperial Valley Station, El Centro.
W. B. Parker, M.S., Assistant Professor of Agricultural Extension.
P. T. Petersen, D.V.M., Assistant in Veterinary Science, in charge of Serum Manufacture.
W. T. Pope, M.S., Instructor in Botany, Davis.
M. B. Pratt, M.F., Assistant Professor of Forestry.
H. J. Quayle, M.S., Professor of Entomology in the Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
W. R. Ralston, B.S., Assistant in Agricultural Extension.
H. S. Reed, Ph.D., Professor of Plant Physiology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
M. A. Rice, B.S., Assistant in Agricultural Extension.
C. L. Roadhouse, D.V.M., Associate Professor of Veterinary Science.
W. C. Roberts, B.S., Assistant in Soil Chemistry.
R. D. Robertson, B.S., Instructor in Agricultural Extension, San Joaquin County.
J. T. Rodgers, Farm Foreman, Davis.
S. S. Rogers, B.S., Assistant Professor of Olericulture, Davis.
R. P. Royce, B.S., Instructor in Animal Husbandry, Davis.
C. W. Rubel, B.S., Assistant Professor of Agricultural Extension.
R. Schmidt, Orchardist at the University Farm, Davis.
N. P. Searls, B.S., Instructor in Agricultural Extension, Yolo County.
W. A. Setchell, Ph.D., Professor of Botany.
H. H. Severin, Ph.D., Instructor in Entomology.
L. T. Sharp, B.S., Assistant Professor of Soil Chemistry and Bacteriology.
C. F. Shaw, B.S., Professor of Soil Technology.
Alfred Smith, M.A., Assistant Professor of Soil Technology.
C. O. Smith, M.S., Instructor in Plant Pathology, Whittier.
Miss E. H. Smith, M.S., Assistant Professor of Plant Pathology.
R. E. Smith, B.S., Professor of Plant Pathology.
R. T. Stevens, B.S., Assistant Professor of Landscape Gardening.
G. R. Stewart, B.S., Assistant Professor of Agricultural Chemistry.
J. E. Stiles, B.S., Assistant in Agricultural Extension.
*A. V. Stubenrauch, M.S., Professor of Pomology.
A. F. Swain, M.S., Assistant in Entomology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
W. L. Sweet, M.S., Assistant in Pomology.
T. F. Tavernetti, B.S., Assistant to Dean of the University Farm School. Davis.
R. H. Taylor. B.S., Assistant Professor of Pomology.

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* Died, February 12, 1917.

C. D. Thomas, Foreman, Poultry Division, Davis.
E. E. Thomas, B.S., Assistant Chemist, Whittier.
J. I. Thompson, B.S., Assistant Professor of Animal Husbandry, Davis.
C. M. Titus, M.A., Instructor in Mathematics, Davis.
J. Traum, D.V.M., Assistant Professor of Veterinary Science.
G. H. True, B.S., Professor of Animal Husbandry, Davis.
W. P. Tufts, M.S., Instructor in Pomology, Davis.
R. S. Vaile, B.A., Assistant Professor of Orchard Management in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
E. C. Van Dyke, M.D., Assistant Professor of Entomology.
H. E. Van Norman, B.S., Dean of the University Farm School, Davis; Vice-Director of the Agricultural Experiment Station; Professor of Dairy Management.
E. C. Voorhies, B.S., Instructor in Animal Husbandry, Davis.
H. A. Wadsworth, B.S., Assistant in Irrigation Practice.
A. E. Way, Field Assistant in Viticulture, Fresno.
H. J. Webber, Ph.D., Director Citrus Experiment Station; Dean of the Graduate School of Tropical Agriculture; Professor of Plant Breeding, Riverside.
H. A. Weinland, B.S., Assistant in Agricultural Extension, San Diego County.
W. W. Weir, Drainage Expert.
E. J. Wickson, M.A., Professor of Horticulture (Emeritus).
C. J. Williams, B.S., Assistant in Agricultural Extension, Sacramento County.
W. W. Wobus, B.S., Assistant in Agricultural Education.
F. W. Woll, Ph.D., Professor of Animal Nutrition, Davis.
C. W. Woodworth, M.S., Professor of Entomology.
H. D. Young, B.S., Assistant in Agricultural Chemistry, Whittier.
C. J. Zinn, Assistant in Soil Technology.
J. R. Zion, B.S., Assistant in Viticulture.

ACTIVITIES

The College of Agriculture has three phases: research, education, and public welfare. It meets these responsibilities through more or less definitely organized activities, as follows:

1. *University instruction* to students who are candidates for the degree of Bachelor of Science in the College of Agriculture. The largest possible freedom of election is permitted during the junior and senior years. For admission see page 14.

2. *University Farm School instruction* to students who have reached the age of 18 years. Applicants under 18 years of age may be admitted if they are graduates of a high school of recognized standing. Applicants who are not high school graduates are required to pass entrance examinations in English Composition and arithmetic. For information concerning courses of study see page 60.

3. *Short courses for practical farmers.* These are given at the University Farm during October and November. For further information send for Announcement of Farmers' Short Courses.

4. *Correspondence Courses in Agriculture.* For circular concerning the twenty-two courses of study and for application blanks address College of Agriculture, University of California, Berkeley.

5. *University extension in agriculture,* including County Farm Bureaus and Boys' Agricultural Clubs. Applications for farmers' institutes should be addressed to the Professor of Agricultural Extension, University of California, Berkeley.

6. *Research.* Certain funds received from the Federal government can be used only for experimental work. State funds are also used for this work. Results of these investigations are published in bulletins, which will be sent free upon request.

7. *Graduate work.* Opportunities of an unusual character are offered by reason of the large number of research laboratories. A special department of graduate work in tropical agriculture has been organized. The Announcement of the Graduate School will be sent free to university and college graduates.

UNIVERSITY INSTRUCTION

Students entering the courses in agriculture leading to the degree of Bachelor of Science are required before their junior year to complete Agricultural Chemistry, Soils, Plant Propagation and Genetics, together with the sciences underlying these courses, as Chemistry, Botany, Bacteriology, Zoology and Geology, and to complete a Summer Practice Course of six weeks. They are also required to complete certain courses in English, mathematics, foreign language, history or economics, mechanical drawing, and surveying. During the junior and senior years they are required to pursue courses in one or more of the following fields of study: Agricultural Chemistry, Agricultural Education, Agricultural Engineering, Agronomy, Animal Husbandry, Citriculture, Dairy Industry, Entomology, Forestry, Genetics, Irrigation, Landscape Gardening and Floriculture, Nutrition, Parasitology, Plant Pathology, Pomology, Poultry Husbandry, Rural Institutions, Soils and Fertilizers, Veterinary

The University Library.

Science, and Viticulture and Enology. The student is free to elect at least one-third of his studies during his junior and senior years from any of the courses offered in the University into which he is qualified by previous preparation to enter.

The freshman and sophomore years must be spent at the University in Berkeley, but one semester of the junior and senior year may be taken at the University Farm at Davis or elsewhere. Only students who have been graduated from an accredited high school or its equivalent can enter these courses. Prospective students are advised to consult with their high school principal concerning the requirements for entrance and to apply to the Recorder of the Faculties, University of California, Berkeley, for proper blanks for submitting the record of their high school work.

Class in Surveying at the University Farm.

It is the aim, first, so to educate students who spend four years or more in the College of Agriculture as to make them vital forces in the progress of their respective communities; second, to train leaders in the dissemination of agricultural knowledge, and competent investigators. The University courses in Agriculture give the mental, scientific, and technical training requisite for efficient work in practical farming, its allied industries, agricultural education, and research.

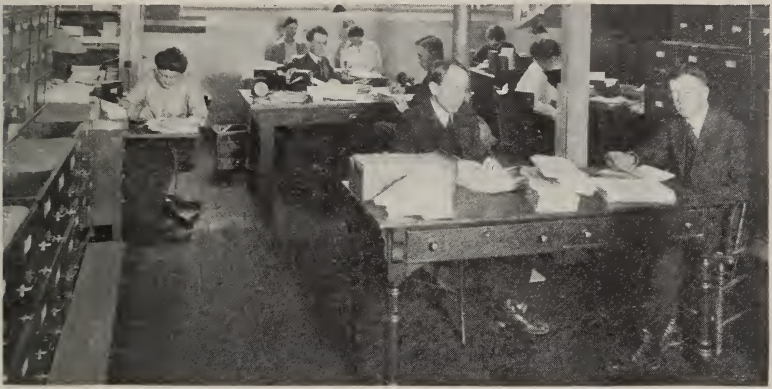
FARM SCHOOL INSTRUCTION

The University Farm School offers a three-year course in Agriculture so arranged that the student may specialize in either animal husbandry or horticulture. This course is planned to meet the needs of students who have reached the age of 18 without the requirements for admission to the four-year courses in agriculture offered by the University, or who may not wish to take the time to acquire so thorough a training in languages, mathematics, and underlying sciences as those courses necessitate.

The course gives students an understanding of the natural laws which govern plant and animal production and a knowledge of the best methods of agricultural practice. The first year is devoted largely to training in the fundamental sciences, particularly botany and chemistry, a knowledge of which is essential to the intelligent study of the technical problems of agriculture. During the second and third years a study is made of all the more important branches of agriculture which are followed in this state. A large proportion of the work is done in laboratory, field, and shop. Most of the time is given to technical subjects; but practical mathematics is studied throughout the course, while work in English and economics is also included. Vocal and orchestral music, physical education, and farm practice are offered to those who wish such instruction.

Shearing sheep.

Every effort is made to meet the needs of high school graduates who desire two years of technical training in agriculture. It is intended to give them a thorough grasp of the principles which underlie the scientific and economic management of soils, crops, and animals. More than half the students are high school graduates. The average age of the intrants is a little over 20 years. High school students are advised to consult their principal, and those not attending high schools may consult the county superintendent of schools concerning the course of study.



Correcting and mailing Correspondence Lessons in Agriculture in the Division of Agricultural Education.

Applications for admission should be sent to the Dean of the University Farm School, Davis, California, so as to reach him, if possible, before September 1.

THE FARMERS' SHORT COURSES

An Act of the Legislature of 1905 provided for the purchase of a farm for the University of California, to be known as the University Farm and to be used by the College of Agriculture for purposes of experimentation and instruction in agriculture. In addition to other details, the Act provided that "short courses of instruction shall also be arranged for in each of the leading branches of agricultural industry, so regulated as to provide for popular attendance and general instruction in agricultural practice.''

Conforming to this Act, and with funds appropriated by each succeeding Legislature, short courses have been given annually, beginning in the fall of 1908. The attendance and the expression of hearty appreciation of the courses have been gratifying to the University and have indicated that the plans adopted meet with general approval.

Four Farmers' Short Courses of six weeks each, beginning the last week of September, are given as follows: General Agriculture, Dairy Manufactures, Horticulture, and Poultry Husbandry. Immediately following the completion of the six-week courses four Farmers' Short Courses of two weeks each are given as follows: Animal Husbandry, Butter Making, Cheese Making, and Farm Tractors. The six-week courses are open without examination to any person 18 years of age or over. Only persons who submit evidence of previous satisfactory practical experience are permitted to take the two-week courses. For the Announcement of Farmers' Short Courses, giving complete programme of lectures and practical exercises, address Dean of the University Farm School, Davis, California.

CORRESPONDENCE COURSES IN AGRICULTURE

Among those who will find these courses fitted to their needs are: busy farmers and their wives who wish to know more of the business of managing the farm and how to make the home surroundings attractive; persons interested in some special agricultural enterprise who wish to make a careful study of it; boys and girls on the farm who cannot attend an agricultural school or college; professional men, business men, mechanics, and others who wish to broaden their agricultural information or to gain information which will enable them to take up some special line of farming; and teachers of agriculture in rural and other public schools.

Each course deals with a special type of farming or a special topic of farm interest—as dairy husbandry, alfalfa culture, walnut culture, and canning and preserving—with the purpose of giving in concise form the information needed by a person engaging in that particular kind of work. They are prepared with special reference to agricultural conditions in California and to the farming methods that apply in the various sections of the state.

At present twenty-five courses are offered; others are being prepared and will be announced when ready for distribution. Those courses now available are: Alfalfa Culture, Corn Culture, Onion Culture, Barley Culture, Dairy Husbandry, Swine Husbandry, Sheep Husbandry, Poultry Husbandry, Bee Keeping, Pear Culture, Plum and Prune Culture, Walnut Culture, Almond Culture, Grape Growing, Citrus Fruits, Olive Growing, Fig Culture, Home Floriculture, Canning and Preserving, Date Culture, Certain Semi-Tropical Fruits, Vegetable Gardening, Adult and Child Nutrition, Lumber and its Uses, The Business Aspects of California Agriculture (for the beginner).

How to Enroll.—Send to the College of Agriculture, Berkeley, California, for an application card and Circular 113, which lists and describes the agricultural correspondence courses now being offered and those that are in course of preparation. After deciding which course to take first, the application card should be filled out and returned. The first two lessons of the course will then be sent, with questions on each lesson and instructions for proceeding with the work.

UNIVERSITY COURSE IN THE COLLEGE OF AGRICULTURE

ADMISSION REQUIREMENTS

Any person, 16 years of age or over, may enter any of the colleges of the University of California as a regular student, without deficiency, if he is able to meet the following high school requirements:

	Units
English, 2 years	6
Mathematics, 4 years	12
Foreign language, 4 years	12
History, 1 year	3
Physics, 1 year	3
Chemistry, 1 year	3
Free-hand and Geometrical Drawing, 2 years	6
Total	45

However, no college requires all the subjects listed above, but each permits certain modifications in the requirements which enable students to elect other subjects in the high school, if they choose to do so. The student who desires to modify his high school course from the standard given above should confer with the principal of the high school or should write to the Recorder of the Faculties, Berkeley, California, for the Circular of Information, which gives a detailed statement of the admission requirements.

The minimum requirements for admission to the College of Agriculture in terms of high school work are:

	Units
English, 2 years	6
Mathematics, 2 years	6
Foreign language, 2 years	6
History, Physics, and Chemistry, each 1 year	9
Foreign language, Advanced English, Intermediate Mathematics, Advanced Mathematics, Drawing, third- or fourth-year science in any combination, 3 years	9
And 3 years of elective work	9
Total	45

For the requirements for admission to the course in Forest Utilization see the Announcement of Courses in Forestry.

A student who presents excessive matriculation credit of approved grade in any prescribed subject thereby reduces the amount of work required of him in that subject in the University, and earns the privilege of substituting elective courses in completing the 130 units of work required for graduation. This arrangement does not lessen the amount of work to be done, but it does give an opportunity to take more courses in agriculture and secure a broader preparation in natural sciences, foreign languages, and economics than would otherwise be possible.

THE COURSES OF STUDY

The requirements for the Bachelor of Science degree in the College of Agriculture are four years of residence and 130 units of study. Ordinarily 64 units will be completed during the freshman and sophomore years, 6 units during the six weeks' summer practice course, and 60 units during the junior and senior years.

FRESHMAN AND SOPHOMORE YEARS

All students must register for the following:

FRESHMAN YEAR

First Half-year		*Second Half-year*	
Bot. 2. General Botany	3	Bot. 3. General Botany	3
Chem. 1A. Inorganic and Qualitative Analysis	5	Chem. 1B. Inorganic and Qualitative Analysis	5
Hyg. 1. General Hygiene	2	†Drawing CD. Mechanical	2
†Math. C. Trigonometry	3	Mil. 1B. Military Drill	1
Mil. 1A. Military Drill	½	Phys. Ed. 1B. Gymnasium	½
Mil. 2A. Tactics	1	Path. 1. Bacteriology	4
Phys. Ed. 1A. Gymnasium	½	Optional	2
Optional	2		
	17		17½

SOPHOMORE YEAR

First Half-year		*Second Half-year*	
Agr. Chem. 1 and 2. Chemistry of Agriculture	5	*C. E. 1E. Surveying Theory and Field Work	3
*C. E. 1E. Surveying Theory and Field Work	3	Gen. 1. Principles of Breeding Plants and Animals	4
Geol. 1A. General Geology	3	Land Gard. 1. Plant Propagation	4
Mil. 1A. Military Drill	½	Mil. 1B. Drill	1
Mil. 2B. Theory	1	Phys. Ed. 1D. Gymnasium	½
Phys. Ed. 1C. Gymnasium	½	Soils 1. Origin, Formation, Classification and Management	4
Zool. 1A. General Zoology	4	*Optional	3 or 6
*Optional	2 or 5		
	19		19½

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* C. E. 1E may be taken either half-year, hence optional units vary, depending on half-year this subject is taken. Students whose major is Forestry must take C. E. 1A–1B instead of 1E.

† Students with matriculation credit in these subjects need not register for them.

Including matriculation units, all students must complete as soon as possible, and before graduation, English, 12 units, and pass an examination in subject A; mathematics, including trigonometry, 12 units; foreign language, 12 units, and pass an examination in subject B; history or economics, 9 units; mechanical drawing and surveying. If the student has entered with the minimum matriculation requirements of 6 units each of English, mathematics, and foreign language and 3 units of history, he must complete in the University 6 units each of English, mathematics, foreign language, and economics.‡ These subjects he will ordinarily take during his freshman and sophomore years.

SUMMER PRACTICE

Each student is required to take a summer practice or traveling course in connection with his proposed major subject before beginning his junior year. This course is intended to give the student an insight into his future occupation. The courses begin usually immediately following Commencement. Expenses vary with the subject selected. At Davis the expense for room, board, and incidentals need not exceed $50 for a period of six weeks. In some subjects railway fare and other incidentals of travel may bring the expense up to $150.

Students must select the particular subject which they will take at the beginning of the second half of the sophomore year, place the same upon their study list, and have it approved by the professor in charge of their major subject. Women may offer in lieu of summer practice 6 units of approved work in the Summer Session.

JUNIOR AND SENIOR YEARS

Each student is required during his junior and senior years to complete 60 units of work. Not more than 16 may be taken in any half-year without permission granted upon formal petition. At least 12 units must be taken each half-year. Among the 60 units normally taken, 36 must be in courses in the Department of Agriculture or in closely related departments, numbered 100 or over. The courses numbered 100 or over are known as major courses. Fourteen of the 36 units must be selected from some single division of the Department of Agriculture. Hence a student is said to be majoring in a given subject when he chooses 14 units from a single division and chooses the major subject requirements for that division. Examples of programmes for the seventeen major divisions or groups in which a student may major are outlined in the following pages. **Students are cautioned that these outlines are mere examples of programmes.** No student is required to follow any set programme during his junior and senior years. All that the student is actually required to do is to complete 36 units of major courses in the Department of Agriculture and related departments, of which 14 must be in the subject in which the student is majoring. Twenty-four of the 60 units of the junior and senior years may be in any courses in the University without regard to their numbering, into which the student is qualified to enter. The work of the junior and senior year is, however, carried on under the direction of the head of the division in which the major subject is taken, and all junior and senior study lists are approved by him before presentation for signature by the dean.

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‡ Three units may be in history.

MAJOR SUBJECTS WITH REQUIREMENTS

Agricultural Chemistry—Chemistry 6A–6B.
Agricultural Education—Botany 116 and Economics 1A or 120.
Agronomy—Botany 116 and Economics 1A or 120.
Animal Husbandry—Physiology 1.
Citriculture—Botany 116 and Economics 1A or 120.
Dairy Industry—Physiology 1 or Chemistry 5.
Entomology—Entomology 1, 2, and 3.
Forestry—Civil Engineering 1A, 1B, 3A; Botany 104A and 5 units of Economics.
Forest Utilization—(See p. 32.)
Irrigation—Civil Engineering 1A, 1B; Physics 2A; Mathematics 1; Soils 99 or C. E. 3A.
Landscape Gardening and Floriculture—(*a*) Botany 116 and Drawing A, B, C, D; (*b*) Botany 116 and Economics 1A or 120.
Nutrition—Chemistry 5.
Parasitology—Physiology 107; Hygiene 3; Entomology 1, 4; Zoology 1A; Pathology 1.
Plant Pathology—Botany 105A.
Pomology—Botany 116 and Economics 1A or 120.
Poultry Husbandry—Physiology 1.
Soils and Fertilizers—Chemistry 5.
Viticulture and Enology—(*a*) Botany 116 and Economics 1A or 120; (*b*) Chemistry 5.

AGRICULTURAL CHEMISTRY

Chemistry offers the only available methods for the more precise measurement and proper study of many of the most important phenomena observed in agriculture. In this lies the justification for courses in chemistry dealing with agricultural materials. These substances are so sensitive to their surroundings, their natural environment is of such a complex character and so difficult to control in practice, that Agriculture and Chemistry cannot be adequately considered independently. The courses in Agricultural Chemistry are designed to familiarize the student with materials and methods of manipulation and to give facility in interpreting his results and in the practical utilization of the data obtained. These courses are co-ordinated with work in organic chemistry, biological chemistry, food analysis, and soil chemistry. Training of this type offers preparation for the career of teacher, investigator, or professional agricultural chemist, in all of which there is abundant opportunity.

COURSE OF STUDY

Summer practice course, Agricultural Chemistry 99, must precede the junior year.

Required for major subject: Chemistry 6A and 6B, preferably taken in sophomore year.

Foreign language: A reading knowledge of German is required; French advised.

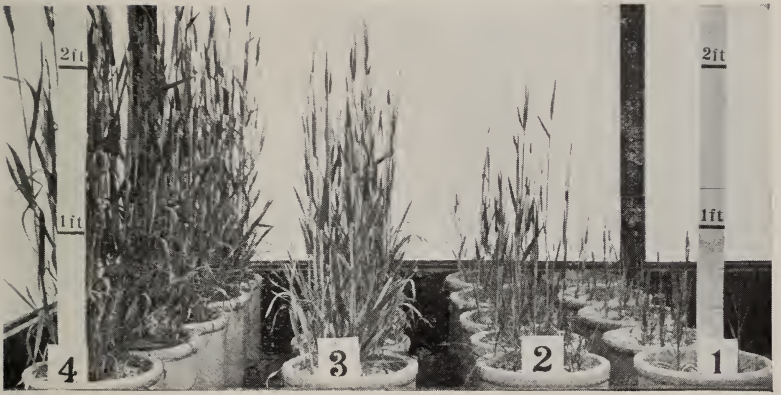
EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Agr. Chem. 101A. Adv. Agr. Chem.	3	Agr. Chem. 101B. Adv. Agr. Chem.	3
Agr. Chem. 104. Seminar	1	Agr. Chem. 102. Fertilizers	2
Bot. 116. Economic Botany	3	Agr. Chem. 104. Seminar	1
Chem. 8A. Organic Chemistry	2	Chem. 8B. Organic Chemistry	2
Chem. 9. Organic Chemistry	3	C. E. 109B. Sewage Disposal	1
C. E. 111B. Water Supplies	1	Nutr. 119. Food Chemistry	3
Pom. 120. General Pomology	3	Soils 101. Soils of the U. S.	3
	16		15

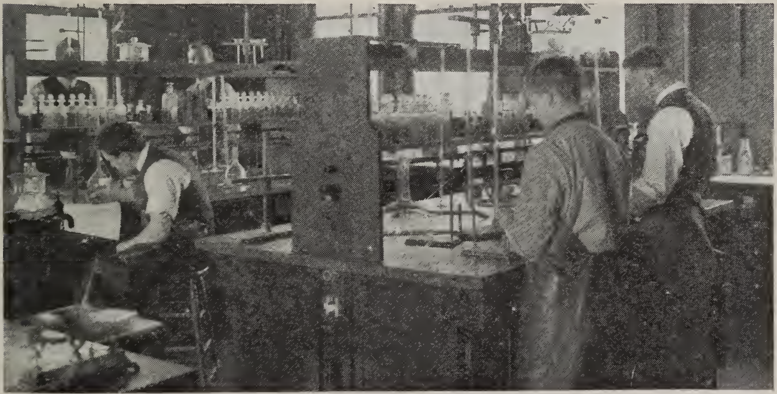
SENIOR

First Half-year		*Second Half-year*	
Agr. Chem. 103. Lab. and Seminar	3	Biochem. 101A. Lectures	5
Agr. Chem. 104. Seminar	1	Agr. Chem. 105. Thesis	4
Chem. 102A. Organic Chemistry	3	Agr. Chem. 104. Seminar	1
Ent. 118. Insecticides	3	Chem. 121. Adv. Inorganic Chem.	3
Nutr. 126. Advanced Nutrition	3	Soils 123. Soil Bacteriology	3
Soils 122. Soil Chemistry	3		15
	16		



201. **Research in Agricultural Chemistry.**

Open to properly qualified graduate students.
Hours to be arranged.



101A–101B. **Advanced Agricultural Chemistry.**

Assistant Professor HOAGLAND.

The technical application of chemical principles to agricultural phenomena and problems; complete and proximate analysis of materials of agricultural interest; choice of methods, limits of permissible error, interpretation of results obtained in the laboratory.

7 hrs., throughout the year; 3 units each half-year. Lecture to be arranged; laboratory, first half-year, Tu Th, 1–4; second half-year, Tu Th, 2–5.

AGRICULTURAL EDUCATION

The Division of Agricultural Education offers instruction in courses which, accompanying instruction in technical agriculture, are intended to prepare students for efficient agricultural teaching.

RECOMMENDATION FOR TEACHER'S CERTIFICATE

For a recommendation for a regular certificate to teach agriculture in high schools the student must meet the requirements of the State Board of Education for high school certification and of the School of Education of the University of California. These include one year of graduate study in addition to the bachelor's degree and the completion of 15 units of work in Education. It is desirable that as many of these units as possible be in Agricultural Education.

A special certificate to teach agriculture in secondary schools may be secured by college graduates who have completed two years of college work in agriculture, and 12 units in Education, one-half of which must be in Agricultural Education.

COURSE OF STUDY

Summer practice course, Agricultural Education 99, must precede the junior year.

Required for major subject: Botany 116 and Economics 1A or 120.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

Agr. Ed. 102. General Science	3
Bot. 116. Economic Botany	3
Irrig. 113. Supply and Use of Water	3
Pl. Path. 120. Diseases of Plants	4
Pom. 120. General Pomology	4
	17

Second Half-year
University Farm, Davis

A. H. 105. Judging	4
D. I. 127. Milk Products	3
Exp. Irrig. 120. Irrigation Practice	3
Poultry Hus. 101. Gen. Management	3
Vet. Sc. 111. Care and Diseases	4
	17

SENIOR

First Half-year

Agr. Ed. 104. Agriculture in Secondary Schools	3
Agr. 106. Cereals	3
Ed. 125 or 103B	3
Ed. 223	1
Agr. 118. Farm Management	3
Agr. Ed. 105. Rural School Administration	3
Seminar or Thesis	2
	18

Second Half-year

Agr. Ed. 125. The Practice of Teaching Agriculture	4
Agr. 120. Crop Production	3
Econ. 120. Agricultural Economics	3
Ed. 105B or 107 or 121	3
For. 1. Elements of Forestry	3
Seminar or Thesis	2
	18

125. **The Practice of Teaching Agriculture.**

Associate Professor HUMMEL.

A five weeks' practice course in selected high schools of the state where agriculture is taught. Making of lesson plans, practice teaching, reports and conferences with supervising teacher and instructor. Supervised practice teaching and observation of methods and management of class and laboratory instruction.

To begin immediately after the close of the second half-year; 4 units. Prerequisite: courses 102 and 104 and Education 223.

100. **Elements of Agriculture, Nature Study and School Gardens.**

Assistant Professor KERN.

Aims, methods, and materials used in agricultural instruction in the elementary and grade schools; making of teaching plans; educational value of the school garden; the home garden and the value of home project work in agricultural education. Practical garden work on the campus. Helps for teachers in the way of bulletins, textbooks, etc.

5 hrs., either half-year; 3 units. Lectures, M Tu, 2; laboratory, W, 2–5.

AGRONOMY

The courses outlined by the Division of Agronomy are intended to offer thorough and comprehensive instruction in field and forage crops, crop production, and farm management. They are co-ordinated with the courses in Animal Husbandry, Dairy Industry, Soil Chemistry, Soil Technology, and Genetics, so that the student shall get a comprehensive knowledge of the three branches of agricultural science—the soil, the plant, and the animal. The courses in farm management correlate the information obtained in the other courses to the end that the student may understand the principles involved in conducting a farm as a profitable business.

In addition, investigations are conducted in soil management and crop production at the University Farm, Davis; at Kearney Park, Fresno; and at Meloland, Imperial Valley. Through these agencies the students are given varied opportunities for farm practice and investigation. They also afford advantages to students desiring to pursue graduate work in the many phases of soil management or crop production.

COURSE OF STUDY

Summer practice course, Agronomy 99, must precede the junior year.
Required for major subject: Botany 116 and Economics 1A or 120.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Agron. 106. Cereals	3
Agron. 130. Conference	1
A. H. 100. Farm Animals	3
Bot. 116. Economic Botany	3
Irrig. 113. Supply and Use of Water	3
Pom. 120. General Pomology	3
	16

Second Half-year *University Farm, Davis*	
Agron. 107. Forage Crops	3
Agron. 120. Advanced Practice, *or*	
Agron. 111. Field Practice	3
A. H. 101. Management of Farm Animals	4
Exp. Irrig. 120. Irrigation Practice	3
Agr. Eng. 101. Farm Machinery and Farm Motors	4
	17

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Agron. 130. Conference	1
Ent. 2 and 3. Economic and Supplementary Course	3
Gen. 120. Pro-seminar	3
Pl. Path. 120. Diseases of Plants	4
Soil Chem. 122. Soil Fertility, *or*	
D. I. 132. Dairy Fundamentals	3
	17

Second Half-year	
Agron. 120. Crop Production	3
Agron. 108. Agrostology	3
Agron. 130. Conference	1
Cit. 101. Fruits, *or*	
Soils 101. Soils of the U. S.	3
Econ. 120. Agricultural Economics	3
Soils 123. Soil Bacteriology, *or*	
Vet. Sci. 100. Diseases of Farm Animals	3
	16

99. **Practice in Agronomy.**

Assistant Professor ADAMS and Mr. HENDRY.

Methods of crop production and farm management, with practice work. Trips into the surrounding country.

Six weeks. Daily, except Sunday, beginning the day after Commencement; 6 units.

106. **Cereals.** Mr. HENDRY.

The cereals of America with special reference to California and Pacific Coast conditions. It is highly desirable that the student shall have finished Botany 3 before entering upon the course.

5 hrs., first half-year; 3 units. Lectures, Tu Th, 9; laboratory, Th, 2–5.

ANIMAL HUSBANDRY

Instruction consists of classroom and practice work in management, feeding, breeding, and judging of the various classes of farm animals. The courses are intended to give a knowledge of the recognized breeds and classes of farm animals and of the principles underlying the successful management of a livestock business. The work is planned essentially for men who expect to become farmers and stockmen, and with this end in view is made as practical in its nature as possible.

The University Farm is equipped with modern buildings. Flocks and herds of high-class representatives of most of the pure breeds of farm animals are maintained for study and use in class work. A herd of grade cows, representative of the better class of cows now in the working dairies of the state, is kept for experimental use and to demonstrate how such a herd may be improved by breeding and selection. Steers and wethers bred and fed at the University Farm for class work received the highest awards at the 1916 International Live Stock Exposition at Chicago and at the last four California state fairs.

COURSE OF STUDY

Summer practice course, Animal Husbandry 99, must precede the junior year.

Required for major subject: Physiology 1.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
A. H. 100. Farm Animals	3
Econ. 1A. Principles of Economics	3
Ent. 116. Veterinary Parasitology	4
Physiol. 1. Introductory Physiology	4
Pom. 120. General Pomology	3
	17

Second Half-year *University Farm, Davis*	
A. H. 102. Feeding Farm Animals	4
A. H. 105 or 106. Judging	4
A. H. 107. Principles of Breeding	3
D. I. 127. Milk, *or* Agron. 107. Forage Crops	3
Vet. Sci. 111. Care and Diseases	4
	18

SENIOR

First Half-year	
Bot. 116. Economic Botany	3
Irrig. 113. Supply and Use of Water	3
Agron. 118. Farm Management	3
Vet. Sci. 117. Bacteriology of Milk	3
Agron. 106. Cereals	3
Thesis	2
	17

Second Half-year *University Farm, Davis*	
A. H. 101. Management of Farm Animals	4
A. H. 105 or 106. Judging	4
A. H. 110. Seminar	1
Exp. Irrig. 120. Irrigation Practice	3
Agr. Eng. 101. Farm Machinery and Motors	4
Thesis	2
	18

101. **Management of Farm Animals.** Assistant Professor MILLER.

The care and management of horses, beef cattle, dairy cattle, sheep and hogs; lectures and practice work in feeding and care of animals at the barn and fitting stock for exhibition purposes.

2 lectures and 2 laboratory periods; 4 units. One laboratory period will include stable practice with the different classes of livestock at the University Farm.

106. **Beef Cattle, Horses, and Sheep.**

Assistant Professors THOMPSON and MILLER.

Lectures on the origin, history and development of breeds and practice work in judging.

6 hrs., second half-year; 4 units. Lectures, Tu Th, 10; laboratory, Tu Th, 1–3.

CITRICULTURE

Instruction given in citriculture at Berkeley includes lectures and laboratory work covering all phases of the citrus industries of the world and of citrus production in California in particular. Practice work which is adaptable to the laboratory, such as the systematic study of species and varieties, morphology of the fruits and other plant parts, root-stocks and pests, is given at Berkeley. Practice work in land judging, planting, pruning, and packing is given in commercial orchards where special arrangements can be made. Instruction in semi-tropical and tropical fruits, including dates, olives, figs, avocados, guavas, loquats, Japanese persimmons, pomegranates, mangoes, and others, is given by lectures, laboratory, and field practice.

The aim of the division is two-fold: first, to educate by means of courses in citriculture; and second, to equip graduates with the knowledge and practice required successfully to prepare, plant, and operate citrus orchards and plantations of semi-tropical fruits on a commercial scale.

The courses are correlated with those in Agronomy, Pomology, Viticulture, Genetics, Entomology, Plant Pathology, Soils, Irrigation, and Farm Mechanics.

COURSE OF STUDY

Summer practice course, Citriculture 99, must precede the junior year.
Required for major subject: Botany 116 and Economics 1A or 120.
One semester at the University Farm at Davis is optional.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Bot. 116. Economic Botany	3
Ent. 1 and 3. General and Supplementary Course	3
Irrig. 113. Supply and Use of Water	3
Pl. Path. 120. Diseases of Plants	4
Bot. 105A. Cryptogamic Botany	3
	16

Second Half-year *University Farm, Davis*	
Agron. 107. Forage Crops	3
A. H. 101. Management of Farm Animals	4
Exp. Irrig. 120. Irrigation Practice	4
Agr. Eng. 101. Farm Machinery and Motors	4
Pom. 103. Orchard Practice	3
	18

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Cit. 102. Semi-tropical Fruits	4
Cit. 103. Pro-seminar	2
Ent. 118. Insecticides	3
Ent. 122. Citrus Fruit Insects	3
Thesis	2
	17

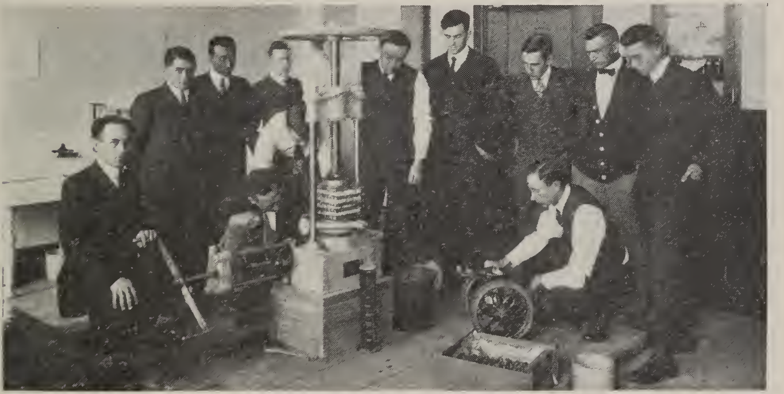
Second Half-year	
Cit. 101. Citrus Fruits	4
Cit. 104. Citrus Investigations	1
Cit. 105. Advanced Citrus	3
Econ. 120. Agricultural Economics	3
Pom. 104. Transportation, Storage, and Marketing	3
Thesis	2
	16

99. **Practice in Citriculture.**

Professor Coit and Assistant Professor Condit.

A traveling practice course in citrus and other semi-tropical fruits, designed to bring the student into active contact with the great fruit industries of the state and to give him some actual practice in as many of the operations of fruit production as practicable.

Six weeks. Daily, except Sunday, beginning the day after Commencement; 6 units. This course or its equivalent is required for graduation of those specializing in citriculture. Prerequisite: two years' study in a university or college course.



102. **Semi-tropical Fruits.** Assistant Professor Condit.

A detailed study of the semi-tropical fruits grown in California, including the olive, date, fig, avocado, guava, loquat, mango, feijoa, and others. Classification, morphology, propagation, culture, harvesting, packing, etc. Lectures, assigned readings, and laboratory work.

6 hrs., first half-year; 4 units. Lectures, Tu Th S, 11. Laboratory, section I, M, 9–12; II, Tu, 2–5.

DAIRY INDUSTRY

The courses offered in Dairy Industry are designed for students planning to specialize in dairy production or in dairy manufactures. Students most interested in production may take considerable work in closely allied divisions while at the same time gaining that familiarity with the manufacture of dairy products which is desirable for men who are to fill responsible positions on dairy farms.

Students wishing to prepare themselves to be specialists in dairy manufactures or to take responsible positions in creameries, cheese factories, and milk plants will find the courses especially suited to their needs. The scientific side of this subject also offers attractive opportunities to men interested in research or instructional work.

The equipment at the University Farm consists of testing laboratories and a commercial creamery, the latter in daily operation manufacturing butter, cheese, and ice cream and handling market milk. The dairy production work is given by the Animal Husbandry Division, which maintains a well equipped dairy barn and a herd representing the principal dairy breeds.

COURSE OF STUDY

Summer practice course, Dairy Industry 99, must precede the junior year.
Required for major subject: Physiology 1 or Chemistry 5.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

A. H. 100. Farm Animals	3
Econ. 1A. Principles of Economics	3
Ent. 116. Veterinary Parasitology	4
Physiol. 1. Introductory Physiology	4
Pom. 120. General Pomology	3
	17

Second Half-year
University Farm, Davis

Agron. 107. Forage Crops	3
A. H. 105. Judging Dairy Cattle and Hogs	4
D. I. 127. Milk and Milk Products	3
Agr. Eng. 101. Farm Machinery and Motors	4
Vet. Sci. 111. Diseases of Farm Animals	4
	18

SENIOR

First Half-year

Nutr. 109. Dairy Chemistry	3
Irrig. 113. Supply and Use of Water	3
Agron. 118. Farm Management	3
Vet. Sci. 117. Bacteriology of Milk	3
Agron. 106. Cereals	3
Thesis	2
	17

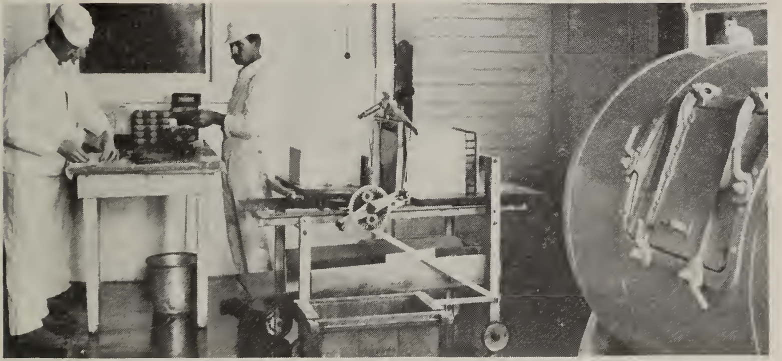
Second Half-year
University Farm, Davis

A. H. 102. Feeding of Farm Animals	4
A. H. 108. Milk Production	3
A. H. 107. Principles of Breeding	3
D. I. 128. Factory Methods	3
D. I. 130. Market Milk	3
Thesis	2
	18

127. **Milk and Milk Products.** Mr. Baird.

The properties, care, and handling of milk; principles and applications of the Babcock tests; the construction and operation of different makes of separators; practice in the handling and churning of cream; farm cheese making. Students who have credit for courses 132 or 1 (Summer Session) will receive but 2 units credit.

5 hrs., second half-year; 3 units. M, 11; W, 9; M, 1–4.



128. **Factory Methods.** Mr. Denning.

The principles of creamery butter making; pasteurization, ripening, and churning of cream; handling and marketing of butter; instruction and practice in making cheese.

5 hrs., second half-year; 3 units. Tu Th, 10; Th, 1–4. Prerequisite: course 116 or 132.

ENTOMOLOGY

Entomological instruction is co-ordinated with the instruction in nearly all the divisions in the Agricultural Department and in the Biological and Medical Departments. The relation of insects to human interests is the leading subject matter in all the courses.

Students intending to specialize in Entomology are advised to begin their entomological work in their freshman year, but special introductory courses are provided in the junior year for those who do not begin their entomological studies earlier.

The courses relating to human and animal parasites are presented under *Parasitology.*

Special attention is also given to Taxonomy, General Insect Biology, Forest Entomology, Insecticides, Horticultural Entomology, and Bee Keeping.

Equipment for the advanced study of the latter subject is located at Davis, and graduate work in citrus insects is given at Riverside.

The programmes given in any division with the elective work, summer course, and thesis in Entomology will be acceptable for students specializing in this subject. The example of programme given below is suggested for students specializing in *Horticultural Entomology.*

COURSE OF STUDY

Summer practice course, Entomology 99, must precede the junior year.
Required for major subject: Entomology 1, 2, and 3.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Bot. 105. Cryptogamic Botany	3
Bot. 116. Economic Botany	3
Ent. 1, 2, 3. General, Economic, and Supplementary	5
Pom. 120. General Pomology	4
Elective	2
	17

Second Half-year	
Cit. 101. Citrus Fruits	4
Ent. 4. Elementary Systematic Entomology	3
Ent. 121. Life History Work	3
L. G. 101. Ornamentation of Home Grounds	3
Vit. 116. Maintenance of Vineyards	3
	16

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Ent. 5. General Laboratory	2
Ent. 103. Special Problems	4
Physiol. 110. Cell Processes	2
Pl. Path. 120. Diseases of Plants	4
	15

Second Half-year	
Agr. Ed. 5. Agencies for Rural Progress	3
Ent. 27. Ecology	3
Ent. 112. Advanced Entomology	3
Ent. 120. Inspection Laws	3
Biochem. 1. Elementary Biochemistry	3
	15

124. **Deciduous Fruit Insects.** Assistant Professor Essig.

The most important western insects attacking deciduous fruit and nut trees; classification, structure, life histories and control. Lectures to be illustrated with specimens and lantern slides. The laboratory exercises are essentially illustrative of the lectures and based on the examination of living and preserved specimens from the orchards. For upper division students and specially for those with majors in pomology and entomology.

8 hrs., second half-year; 4 units. Lectures, Tu Th, 4; laboratory, Tu Th, 1–4.

121. **Life-History Work.** Assistant Professor Van Dyke.

Method and practice in working out the life-histories of insects in insectary and field.

6 to 9 hrs., either half-year; 2 or 3 units. Tu W Th, 1–4. Prerequisite: course 1, 2, or 4.

FORESTRY

The Division of Forestry offers the following work:

1. A four-year professional course in general forestry, to train students for the practice of forestry in lines of work where the problems are not too closely specialized along engineering lines. For first two years of this course see page 15.

2. A four-year professional course in forest utilization, to prepare men for work as forest or logging engineers.

3. A five-year professional course combining the work in general forestry and that in forest utilization. This offers an exceptionally strong foundation for a career of wide usefulness.

4. A thorough college training for students who do not expect to practice forestry but who may care to choose forestry as a means of securing a general education and a training which would be useful in business life or otherwise. Any one of the three courses above may be used for this purpose, and for such students the course will be modified to meet individual needs.

5. Courses for students whose major work is in other lines but who wish a general knowledge of the aims and methods of the forester, or who wish detailed technical instruction in certain parts of forestry, such as wood technology.

6. A short course of twelve weeks, for men in the United States Forest Service or in the employ of lumber companies.

7. A special arrangement of courses for students in the College of Commerce who are preparing for the wholesale or retail lumber business.

Detailed information regarding these various lines of work and programmes of study are given in the Announcement of Courses in Forestry, which can be procured by addressing the Division of Forestry, College of Agriculture, University of California, Berkeley, California.

106. **Silviculture: Artificial Reproduction.**

Assistant Professor Metcalf.

Tree seeds; direct seeding; the forest nursery; forest planting; woodlot and windbreak planting; fixation of sand dunes.

5 hrs., first half-year; 2 units. Lecture, F, 10; laboratory or field work, Tu, 1–5.

99. **Practice in Forestry.**

Assistant Professor Bruce in charge; Professors Mulford and Mason, and Assistant Professor Pratt.

Practice in scaling and estimating timber and the study of its growth; timber survey of a large tract; detailed study of logging and milling operations; field instruction in silviculture; collection of data for a working plan.

Eleven weeks, summer camp; 6 units. To be held in the pine region of the Sierra or in tne redwood region, near large logging operations.

IRRIGATION

Instruction in Irrigation consists (*a*) of work given at Berkeley by the Department of Irrigation and (*b*) of work given at Davis by the Division of Experimental Irrigation of the Department of Agriculture. The work given at Davis is confined to practical field problems. The instruction offered at Berkeley by the Department of Irrigation for students in the College of Agriculture is designed to meet the needs of the following classes of students:

First—Those who are planning to use a knowledge of irrigation practice as an aid to successful agriculture. For these students the following courses are offered: Irrigation 101, 113, 104, 105, 115, and 207. Course 113 on the agricultural use of water and irrigation practice is especially recommended.

Second—Those who are preparing themselves for positions in the operation, maintenance, and management of irrigation systems and companies; or for investigational work such as that carried on by the United States Department of Agriculture or in agricultural colleges. For these students the suggested course of study outlined below gives the proper correlation and sequence of allied subjects.

COURSE OF STUDY

For students in the College of Agriculture who wish to prepare for irrigation farmer, water master, manager or superintendent.

Required for major subjects: General Physics (2A), Elements of Analysis (Mathematics 1), and Surveying (Civil Engineering 1A, 1B), C. E. 3A or Soil Tech. 99.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
An. Hus. Farm Animals	3	Agron. 120. Crop Production	3
Econ. 14A. Accounting	3	C. E. 8. Materials of Construction	2
Irrig. 113. Agricultural Use of Water and Irrigation Practice	3	Econ. 120. Economics of Agriculture	3
Physics 2A. General Physics	3	Irrig. 101. Institutions and Economics	3
Pom. 120. General Pomology	3	Irrig. 105. Agricultural Hydraulics	3
		Soils 102. Advanced Soil Physics	3
	15		**17**

SENIOR

First Half-year		*Second Half-year* *University Farm, Davis*	
Agron. 118. Farm Management	3	Agron. 111. Field Practice	3
C. E. 112. Dams	1	Exp. Irrig. 120. Irrigation Practice	3
Cit. 104. Citrus Investigations	2	Farm Mech. 2. Carpentry	2
Irrig. 104. Drainage	2	Farm Mech. 101. Machinery and Motors	4
Irrig. 115. Drawing	3	Oler. 101. Vegetable Gardening	4
Irrig. 207. Operation and Maintenance	2	Thesis	1
Rur. Inst. 202. Rural Credits and Land Settlement	2		
	15		**17**

120. **Irrigation Practice.** Assistant Professor Beckett.

Practical field problems in the preparation of land, conveyance, measurement, and application of water to various crops.

7 hrs., second half-year; 3 units. Lecture, W, 10; field work, section I, M F, 8–11; II, Tu, 3–5, W, 1–5; III, Tu, 1–4, S, 9–12. Prerequisite: Irrigation 113; Civil Engineering 1A or 1E.

113. **Agricultural Use of Water and Irrigation Practice.**

Assistant Professor Harding.

Soil moisture and plant growth; disposal of irrigation water applied to the soil; water requirement of crops; duty of water; preparation of land and methods of irrigation; farm ditches and structures; small pumping plants; measurement of water.

3 hrs., first half-year; 3 units. Three sections: I, Tu Th S, 9; II, Tu Th S, 10; III, Tu Th S, 11. Prerequisite: at least junior standing.

LANDSCAPE GARDENING AND FLORICULTURE

The course in Landscape Gardening is designed, first, to offer professional instruction both theoretical and practical to those who desire to become either successful practitioners of the art, competent office assistants, or reliable superintendents of construction; and, second, to furnish instruction of an untechnical nature that will enable others to become familiar with the fundamental principles governing the art.

The course in Floriculture is designed to furnish theoretical and practical instruction to those who intend to become eventually wholesale or retail commercial growers of cut flowers and potted plants, or competent florists on private estates or in public parks. As facilities permit, students will be allowed to specialize in the growing of certain crops and in store management, including artistic design and decoration and other phases.

COURSE OF STUDY

Summer practice course, Landscape Gardening 99 or Floriculture 99, must precede the junior year.

Requirements for major subject in Landscape Gardening: Botany 116; Drawing A-B and C-D.

Requirements for major subject in Floriculture: Botany 116 and Economics 1A or 120.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

Bot. 116. Economic Botany	3
Drawing 2A. Descriptive Geometry	3
Drawing 114A. Advanced Free-hand	2
Irrig. 113. Supply and Use of Water	3
L. G. 103. Theory of Design	4
L. G. 104A. Plant Materials	2
	17

Second Half-year

C. E. 8D. Materials	2
Drawing 2B. Descriptive Geometry	3
Drawing 114B. Advanced Free-hand	2
Ent. 114. Forest Insects	3
L. G. 104B. Plant Materials	2
L. G. 105. Elementary Landscape Gardening	4
	16

SENIOR

First Half-year

Arch. 101A. Elements of Architecture	3
L. G. 107. History and Literature	2
C. E. 106. Highway Engineering	2
L. G. 104C. Plant Materials	2
L. G. 108. Tree Surgery	3
L. G. 106A. Advanced Landscape Gardening	4
Thesis	2
	18

Second Half-year

Arch. 101B. Elements of Architecture	3
C. E. 116. Contracts and Specifications	1
Drawing 9. Lettering	1
Drawing 125. Perspective	2
L. G. 106B. Advanced Landscape Gardening	4
Thesis	2
Elective	2
	15

201. Modern Civic Art. Professor Gregg.

Advanced problems in design with special reference to city parks, municipal park systems, recreation areas, civic centers and other civic features, as they form intimate parts of the city plan as a complete whole. Lectures, outside reading, and the preparation in various forms of plans, specifications, and reports.

36 hrs., first half-year; 12 units. Hours for consultation and criticism to be arranged. Allied subjects in engineering and architecture and other departments of the University, as recommended by the instructor, should be elected to parallel this course.

106A–106B. Advanced Landscape Gardening. Professor Gregg.

The more advanced problems of design and reconstruction from topographic and transit surveys as offered by the larger areas of parks, playgrounds, and country estates, with detailed plans, reports, and estimates.

12 hrs., throughout the year; 4 units each half-year. M, 9–12; Tu Th F, 2–5. Prerequisite: course 105.

NUTRITION

The Division of Nutrition offers instruction in human and animal nutrition. The courses are co-ordinated with those of Agricultural Chemistry, Animal Industry, Dairy Industry, Public Health, and Physical Education.

Instruction in animal nutrition is offered through lectures, laboratory practice and field experiments in nutritional physiology, digestion experiments, and methods of feeding stock and poultry.

Courses in human nutrition are offered through lectures and laboratory practice which include (1) general and special instruction in digestion and metabolism, food requirements and food values leading to positions in research laboratories and commissary departments; (2) general and special training in methods of food analysis, detection of preservatives and adulterants, leading to positions in government food laboratories.

COURSE OF STUDY

Summer practice course, Nutrition 99, must precede the junior year.
Required for major subject: Chemistry 5.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Econ. 1A. Principles of Economics	3
Chem. 8A. Organic Chemistry	2
Nutr. 106. Feeds and Feeding	2
Nutr. 114. Fundamentals of Nutrition	2
Pom. 120. General Pomology	4
D. I. 132. Dairy Fundamentals	3
	16

Second Half-year	
Nutr. 116. Foods and Food Products	2
Nutr. 120. Pro-seminar	2
Nutr. 129. Problems in Nutrition and Food Chemistry (Thesis)	3
Agron. 104. Weeds	2
Vet. Sc. 100. Diseases of Farm Animals	3
Nutr. 117. Laboratory Course in Food Analysis	3–4
	15–16

SENIOR

First Half-year	
Soils 122. Soil Chemistry, *or*	
A. H. 100. Farm Animals	3
Nutr. 126. Advanced Nutrition	3
Nutr. 127. Laboratory Course in Advanced Nutrition	2
Vet. Sc. 117. Bacteriology of Milk	3
Agron. 106. Cereals	3
Nutr. 129. Problems in Nutrition and Food Chemistry (Thesis)	2
	16

Second Half-year	
Nutr. 119. Advanced Course in Food Chemistry	3
Nutr. 129. Problems in Nutrition and Food Chemistry (Thesis)	2
Pom. 104. Fruit Transportation, Storage, and Marketing	3
Soils 123. Soil Bacteriology as Related to Soil Fertility	3
Citr. 101. Citrus Fruits, *or*	
Elective	4
	15

231. **Research in Food Chemistry and in Nutrition.**

Professor Jaffa and Assistant Professor Mattill.

Hours and credit to be arranged.

127. **Laboratory Course in Advanced Nutrition.**

Assistant Professor Mattill.

Designed to accompany course 126, and comprising a study of digestion and metabolism, with practice in nutrition experiments on animals and man.

6 hrs., first half-year; 2 units. Hours to be arranged. Prerequisite: Chemistry 1A–1B, 5, 8A–8B; Physiology and Agricultural Chemistry 101A–101B recommended.

PARASITOLOGY

The courses are intended to offer thorough training in Parasitology to equip prospective teachers in this field, for which there is an occasional demand, and for the training of experts as demanded in the various fields of Public Health and Animal Industry. Courses are also designed to supplement the instruction in Veterinary Science, Animal Industry, Hygiene and Public Health, particularly Rural Public Health, in which a special course is offered in this division.

An adequate collection of parasitic protozoa, worms, insects, and arachnids is available for study. Ample laboratory facilities are offered, including the usual biological equipment in addition to a bacteriological incubator, autoclave, large regulated insectary, and in a separate building ample equipment for animal experimentation.

Among the problems receiving special attention during the past few years are malaria control, house-fly control, bionomics of fleas and ticks, venomous ticks and spiders, parasites of poultry, parasites of deer, liver flukes of sheep, scab and mange in certain domesticated animals, lung worms in goats, etc.

COURSE OF STUDY

Summer practice course, Entomology 99, must precede the junior year.

Required for major subject: Physiology 107, Hygiene 3 (Epidemiology), Entomology 1, 4, Zoology 1A, Pathology 1.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Biochem. 1. Elementary Biochemistry	3
Ent. 116. Veterinary Parasitology	4
Vet. Sc. 117. Bacteriology of Milk	3
Juris. 18A. Commercial Law	2
Physiol. 107. Physiology	4
	16

Second Half-year	
Ent. 2 and 4. Economic and Systematic Entomology	5
Ent. 126. Medical Parasitology	3
Ent. 127. Medical Parasitology Lab.	2
Hygiene 108. Applied Hygiene	3
Vet. Sc. 100. Diseases of Farm Animals	3
	16

SENIOR

First Half-year	
Ent. 129. Thesis	2
Ent. 200A. Seminar	1
Ent. 211. Growth	2
Hygiene 104. Health Surveys	3
A. H. 100. Farm Animals	3
Pol. Sci. 110A. Local Government	3
Zool. 110. Protozoology	3
	17

Second Half-year	
C. E. 124. Water Supply and Sewage	3
Econ. 110A. Elementary Statistics	3
Econ. 120. Agricultural Economics	3
Ent. 107. Microtechnique	3
Ent. 129. Thesis	2
Ent. 200B. Seminar	1
	15

99. Practice in Entomology. The Staff.

In the summer of 1915 a study of forest insects in the high Sierra was engaged in. In 1916 a mosquito-malaria survey of the state was undertaken. In 1917 the work will consist of practice in the management of out-apiaries. A camp will be established in one of the principal honey districts of the state. Students will be given practice in the various operations.

Six weeks, beginning the day after Commencement; 6 units.

116. Veterinary Parasitology.

Associate Professor Herms and Mr. Freeborn.

The relation of animal parasites and disease carriers to domesticated animals, with special emphasis placed on control. Specially designed for students in veterinary science and animal industry. This course satisfies in full the requirements in parasitology in class A veterinary colleges.

8 hrs., first half-year; 4 units. Lectures, M W, 10; laboratory, M W, 1–4. Prerequisite: Zoology 1A and Bacteriology 1, or equivalent.

PLANT PATHOLOGY

The instruction offered in plant pathology is intended to meet the needs of students wishing to specialize in the subject, and also those who want some knowledge of the nature of plant diseases to aid them in agricultural pursuits. In the past a number of students have taken practically all the undergraduate work offered in this division, although planning to enter work other than technical plant pathology. Such students have engaged in high-class agriculture, horticulture, teaching, and technical work in other lines with marked success.

For those desiring to make plant pathology their profession it may be said that the facilities for work at Berkeley are being constantly improved, while the problems to be investigated in the accessible regions in horticulture, agriculture, floriculture, and forestry are very numerous.

Those intending to specialize in the subject should have early in their work thorough training in botany, chemistry, physiology, bacteriology, entomology, soils, foreign languages, and actual experience in the handling of crops.

COURSE OF STUDY

Summer practice course, Plant Pathology 99, must precede the junior year.

Required for major subject: Botany 105A.

Foreign language: For the training of a technical plant pathologist familiarity with several foreign languages is highly desirable, particularly Latin, German, and French.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Bot. 105A. Cryptogamic Botany	3	German 3B. Technical	3
German 3A. Technical	3	Bot. 104B. Phaenogamic Botany	3
Chem. 6A. Quantitative Analysis	3	Chem. 6B. Quantitative Analysis	3
Pl. Path. 120. Diseases of Plants	4	Ent. 1. Economic Entomology	4
Pom. 120. General Pomology	3	Ent. 2. Economic Entomology	2
	16	Elective	3
			18

SENIOR

First Half-year		*Second Half-year*	
Bot. 109A. Vegetable Histology	3	Bot. 109B. Vegetable Histology	3
Chem. 8A. Organic Chemistry	2	Chem. 8B. Organic Chemistry	2
Chem. 9. Organic Chemistry Lab.	3	Chem. 100. Organic Chemistry Lab.	3
Pl. Path. 122A. Advanced Course	4	Pl. Path. 122B. Advanced Course	4
Pl. Path. 125A. Spec. Topics (Thesis)	2	Pl. Path. 125B. Spec. Topics (Thesis)	2
Pl. Path. 126. Pro-seminar	1	Pl. Path. 126. Pro-seminar	1
	15		15

120. **The Diseases Affecting Cultivated Plants in California.**

Associate Professor HORNE and Assistant Professor E. H. SMITH.

Lectures and laboratory studies on diseases of economic plants. A beginning course required of juniors whose major is plant pathology, and intended also for other students wishing a general view of the subject.

8 hrs., first half-year; 4 units. Lectures, Tu Th, 8; laboratory, section I, Tu Th, 9–12; II, Tu Th, 1–4. Prerequisite: Botany 2 and 3, Bacteriology 1.

122A–122B. **Advanced Course.** Prof. SMITH and Assoc. Prof. HORNE.

A comprehensive technical course upon the principles of pathology, nature of disease, and the chief disease-inciting influences; study of disease-producing organisms, their development, activities, and relation to host plants, by means of microscopic, cultural, histological, and infection methods. Systematic review of important diseases. Lectures, laboratory, and collateral reading. Required of seniors whose major is plant pathology.

8 hrs., throughout the year; 4 units each half-year. Lectures, M W, 8; laboratory, M W, 9–12.

POMOLOGY

The courses in Pomology are designed to give thorough instruction in the fundamental principles of fruit growing with special reference to the culture, transportation, storage, marketing, and utilization of deciduous fruits, small fruits, and nuts. Along with the instruction in the technical aspects, laboratory exercises and demonstrations are given in the laboratories at Berkeley and practice work is given at the University Farm, Davis. Students majoring in Pomology will spend the spring semester of their junior or senior years at the University Farm as a requirement for graduation. The work at the farm includes practice courses in all phases of nursery and orchard work. Opportunity is also given for students, while at the farm, to take up work along other lines of agriculture, thus broadening their training and point of view.

All students expecting to major in Pomology should confer with the head of the division as early as possible in order that proper electives may be selected to meet the requirements of their major work.

COURSE OF STUDY

Summer practice course, Pomology 99, must precede the junior year.
Required for major subjects: Botany 116 and Economics 1A or 120.
Foreign language: French or German advised.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

Bot. 116. Economic Botany	3
Ent. 124. Deciduous Fruit Insects	4
Irrig. 113. Supply and Use of Water	3
Pl. Path. 120. Diseases of Plants	4
Pom. 101. Principles of Fruit Growing	3
	17

Second Half-year
University Farm, Davis

A. H. 105. Judging	4
D. I. 127. Milk and Milk Products	3
Exp. Irrig. 120. Irrigation Practice	4
Agr. Eng. 101. Farm Machinery and Motors	4
Pom. 103. Orchard Practice	3
	18

SENIOR

First Half-year

Agron. 118. Farm Management	3
Ent. 118. Insecticides and Fungicides	2
Gen. 120. Special Topics, *or*	
Rural Inst. 202. Rural Credits	2
Pom. 102. Orchard Fruits	3
Pom. 105A. Pro-seminar	1
Pom. 106. Systematic Pomology	2
Thesis	2
	15

Second Half-year

Cit. 101. Citrus Fruits, *or*	
Vit. 116. Maintenance of Vineyards	4
Econ. 120. Agricultural Economics	3
Pom. 104. Transportation, Storage, and Marketing	3
Pom. 105B. Pro-seminar	1
For. 1. Elements of Forestry, *or*	
Pom. 107. Nuciculture	3
Thesis	2
	16

103. **Orchard Practice.** Mr. Hendrickson.

A laboratory course designed to give the student actual practice under orchard and field conditions in the various operations of deciduous fruit production; propagation, planting, pruning, spraying, etc. Given at Davis.

9 hrs., second half-year; 3 units. W F, 1–5:30. Required of all juniors with a major in pomology. Prerequisite: course 101.

106. **Systematic Pomology.** Mr. Hendrickson.

A technical study of fruit varieties, their botanical and varietal relationships; description, identification, scoring and judging. Laboratory work with informal lectures and recitations.

6 hrs., first half-year; 2 units. Th F, 2–5. Required of all seniors with a major in pomology. Prerequisite: course 101.

POULTRY HUSBANDRY

This course has been designed to give the student a comprehensive and detailed grasp of principles and their practical application to the business side of poultry farming in order that he may be better fitted to handle successfully the economic problems encountered in the development and management of a poultry plant. A thorough training in the science and art of Poultry Husbandry requires not only that one be versed in hatching, rearing, feeding, breeding, and caring for fowls but also that one know how to handle tools, construct poultry buildings, till the soil and raise grain and forage crops for the stock, irrigate these crops, operate and care for farm machinery, and, finally, to know how to keep accounts and manage a farm on a sound financial basis.

A well equipped poultry plant of ten acres at the University Farm, on which are kept 2000 fowls of over twenty-five representative varieties, affords students an abundant opportunity to secure practical experience and also to pursue advanced work along investigational lines.

COURSE OF STUDY

Summer practice course, Poultry Husbandry 99, must precede the junior year.

Required for major subject: Physiology 1.

Foreign language: A reading knowledge of German or French is required.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

Ent. 116. Veterinary Parasitology	4
Pom. 120. General Pomology	3
Physiol. 1. Introductory Physiology	4
Econ. 14. Accounting	3
Econ. 1A. Principles of Economics	3
	17

Second Half-year
University Farm, Davis

D. I. 127. Milk and Milk Products	3
Agr. Eng. 101. Farm Machinery and Motors	4
P. H. 101. Feeding and Care	3
P. H. 102. Management	3
Vet. Sc. 111. Diseases of Animals	4
	17

SENIOR

First Half-year

Agron. 106. Cereals	3
Agron. 118. Farm Management	3
Bot. 116. Economic Botany	3
Irrig. 113. Supply and Use of Water	3
Vet. Sc. 117. Bacteriology of Milk	3
Thesis	2
	17

Second Half-year
University Farm, Davis

Agron. 107. Forage Crops	3
A. H. 102. Feeding Farm Animals	4
Exp. Irrig. 120. Irrigation Practice, *or* Pom. 103. Orchard Practice	3
P. H. 104. Pro-seminar	2
P. H. 105. Research	3
Thesis	2
	17

101. **Poultry Husbandry.**

Associate Professor DOUGHERTY and Mr. LLOYD.

The feeding, housing, breeding, and general management of poultry; study of the egg; anatomy and physiology of poultry; parasites and sanitation.

5 hrs., second half-year; 3 units. Lectures, Th F, 11; laboratory, F, 2–5.

102. **Poultry Management.**

Associate Professor DOUGHERTY and Mr. LLOYD.

A practice course in operating incubators, keeping records, hatching eggs, brooding chicks, feeding and caring for pens of fowls.

Second half-year; 3 units. Practice, M Tu W Th F S Sun, 8–9, 11–12, 4–5. Course 101 must precede or accompany this course.

SOILS AND FERTILIZERS

The curriculum for the prospective soils specialist as indicated below is of such a nature as to make it comprehensive. It is intended to give him a good insight into the sciences which are intimately concerned in the production and maintenance of soil fertility and a knowledge of the best methods for their correlation. Thus studies in soil mapping, soil classification, soil physics, soil chemistry, soil bacteriology, and plant physiology are emphasized and related. The work in soil mapping and classification is intended to bring the student into close touch with soils and crops in the field and the laboratory and greenhouse work to give him light on the more intimate nature of the constitution of soils.

The kind of training just outlined equips the soils specialist with qualifications for work in teaching and investigation in state or federal government, or private institutions which require highly trained men.

The student is advised to take one year of graduate study before going into investigational work. Every encouragement is extended to those who pursue graduate studies.

COURSE OF STUDY

Summer practice course, Soil Technology 99, must precede the junior year.

Major subject requirement: Chemistry 5.

Foreign languages: A reading knowledge of both German and French required.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Agron. 106. Cereals	3	Agron. 108. Agrostology	3
Bot. 116. Economic Botany	3	Cit. 101. Citrus Fruits	4
Chem. 8A. Organic Chemistry	2	Soils 101. Soils of the U. S.	3
Pom. 120. General Pomology	3	Soils 102. Advanced Soil Physics	3
Soils 122. Soil Chemistry	3	Soils 123. Soil Bacteriology	3
Soils 126. Pro-seminar	1	Soils 126. Pro-seminar	1
	15		17

SENIOR

First Half-year		*Second Half-year*	
Agron. 118. Farm Management	3	Agr. Chem. 102. Chemistry of Fertilizers	3
A. H. 100. Farm Animals	3	Elective	4
Irrig. 113. Supply and Use of Water	3	Econ. 120. Agricultural Economics	3
Irrig. 104. Drainage	2	Irrig. 101. Institutions and Economics	3
Pl. Path. 120. Diseases of Plants	4	Soils 126. Pro-seminar	1
Soils 126. Pro-seminar	1	Soils 127. Thesis con.	2
Soils 127. Thesis	2		
	18		16

99. **Practice in Soil Surveying.**

Professor Shaw and Assistant Professor A. Smith.

A six weeks' course of study on the methods of classifying and mapping soils, consisting primarily of practical field work in soil surveying; the construction of base maps; and the preparation of reports on the surveyed areas. Studies of alkaline soils and their reclamation, the adaptation of crops to soils, problems of irrigation, drainage, and soil management. The field work will be supplemented by an inspection trip covering a large part of the state.

6 units. Prerequisite: course 1.

122. **Soil Chemistry as Related to Soil Fertility.**

Professor Lipman and Assistant Professor Gericke.

The chemical examination of soils, including short methods for some important determinations, and complete analyses of soils; greenhouse experiments in conjunction. Laboratory and greenhouse exercises, recitations and lectures.

9 hrs., first half-year; 3 units. M W F, 1–4. Prerequisite: Chemistry 1A–1B, 5, and Soil Technology 1.

VITICULTURE AND ENOLOGY

Instruction in this division is given to regular and special students at Berkeley by means of courses of lectures on grape growing, wine making, food preservation, and technical zymology, supplemented by laboratory and field courses. Its aim is to prepare students to become efficient managers of vineyards, cellars, and packing houses, or educators and specialists in the various viticultural, fermentative, and food preserving industries. At Davis appropriate instruction in grape growing is given to students. At suitable points throughout the state instruction is given to those actually engaged in the industries by means of lectures and demonstrations.

COURSE OF STUDY

A. VITICULTURE B. ENOLOGY C. TECHNICAL ZYMOLOGY

Summer practice course, Viticulture and Enology 99, must precede the junior year.

Required for major subject: A, Botany 116 and Economics 1A or 120; B and C, Chemistry 5.

Foreign languages: A reading knowledge of French or German required. Italian advised.

EXAMPLE OF PROGRAMME

A. VITICULTURE

JUNIOR

First Half-year	
Bot. 116. Economic Botany	3
Ent. 2 and 3. Economic and Supplementary Course	3
Irrig. 113. Supply and Use of Water	3
Pl. Path. 120. Diseases of Plants	4
Pom. 101. Principles of Fruit Growing	3
	16

Second Half-year *University Farm, Davis*	
A. H. 101. Management of Farm Animals	4
D. I. 127. Milk and Milk Products	3
Exp. Irrig. 120. Irrigation Practice	4
Agr. Eng. 101. Farm Machinery and Motors	4
Pom. 103. Orchard Practice	3
	18

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Econ. 1A. Principles of Economics	3
Pom. 106. Systematic Pomology	2
Pom. 102. Orchard Fruits	3
Vit. and Enol. 114. Vinification	3
Thesis	2
	16

Second Half-year	
Agr. Chem. 102. Chemistry of Fertilizers	3
Econ. 1B. Principles of Economics	3
Pom. 104. Transportation, Storage, and Marketing	3
Vit. and Enol. 116. Maintenance of Vineyards	3
Vit. and Enol. 117. Diseases of the Vine	2
Thesis	2
	16

99. **Practice in Viticulture and Enology.**

Observation of the vineyard industry and exercise in some of its special operations; pruning and grafting at Davis during the winter vacation; trips for observation and study of vineyards, packing-houses, and wineries during the summer vacation. Students who prefer may satisfy the requirements of this course in whole or in part by work in commercial vineyards and packing-houses done under the advice and supervision of the instructor. Notice of the exact dates and localities of the traveling course will be announced in time.

116. **Viticulture.** Professor Bioletti.

Methods of establishing and maintaining vineyards, with special reference to conditions existing in California.

3 hrs., second half-year. M W F, 9.

INSTRUCTION NOT REPRESENTED BY MAJOR SUBJECTS

Certain divisions of the Department of Agriculture offer instruction which is not represented by the seventeen major subjects described in the foregoing pages. The courses given may be elected by any student having the necessary preparation.

AGRICULTURAL ENGINEERING

Present equipment permits of three courses which may be grouped under the head of Farm Mechanics:

(1) *Building Construction.*—A shop practice course supplemented with lectures arranged for those who have to do with the repair and construction of farm buildings. The course includes instruction in the use and care of tools and elements of carpentry, which is followed by actual construction of parts of various farm buildings.

101. **Farm Machinery and Farm Motors.** Professor Davidson.

Economics of farm machinery, mechanics of machines, materials of construction. The development, construction, functions, adjustment, operation, and repair of farm machinery. The production and transmission of power. Principles of draft. The study of the horse as a motor; gasoline and oil engines; electric power; tractors. Laboratory work consists in the study, operation, and adjustment of the machines discussed in the classroom.

8 hrs., second half-year; 4 units. Lectures, section I, Tu F, 10; II, Tu F, 11. Laboratory, section I, M F, 8–11; II, M, 1–5, Tu, 3–5; III, W, 9–11, F, 1–5.

(2) *Forge Practice.*—A course including the principles and practice of general blacksmithing which will be of value to those who have charge of the management and care of the machinery equipment of the farm.

(3) *Farm Machinery.*—A course treating of the general subject of farm machinery and the power equipment of the modern farm, arranged primarily for the student who intends to make the farm the object of his life's work. The course includes the construction, functions, and methods of operating, adjusting, and repairing farm machinery; the principles of draft; the measurement, production, and transmission of power for farm use. The laboratory work, which forms a large part of the course, is carried on as far as possible in the field, and consists of practical organized tests and demonstrations which set forth the essential features of efficient operation.

GENETICS

Opportunity is offered to properly qualified students to pursue individual study of special topics, including a pro-seminar, meeting at least once each week for conference, reports, and discussions. For students with such major subjects as agronomy, pomology, citriculture, viticulture, floriculture, forestry, entomology, plant pathology, or animal husbandry, a topic in genetics may be so chosen as to make it closely correlated with the major subject. Present facilities will permit of the following lines of work:

1. Study of variation in plants and animals with reference to evolution and breeding.

Material: Commercial varieties of the peach and allied species; walnuts, walnut hybrids, parthenogens and mutants; parent strains and hybrids of lilies, delphiniums, tomatoes, peas, wheat, maize, barley, strawberries, and several pure strains of the pomace fly, *Drosophila ampelophila.*

2. Breeding experiments with seed plants and insects.

Material: Any of the material mentioned under (1) or such other species of plants or animals as may be found practicable.

3. Cytological study of the reproductive processes in seed plants and insects.

The wealth of plant forms, both wild and cultivated, and of insect life, makes it possible to undertake this line of work at any time.

4. Statistical study of variation and inheritance in tobacco, tomato, and maize.

OLERICULTURE

The work is given at the University Farm, Davis, where ample areas for the practical work are available. The course deals with the principles of vegetable gardening and with the methods of production and marketing applicable to California conditions.

101. **Vegetable Gardening.** Assistant Professor Rogers.

General principles of vegetable gardening; detailed directions for the production and marketing of vegetables under California conditions, supplemented by practical work in the garden.

6 hrs., second half-year; 4 units. Lectures, M, 11; T, 11; W, 8; 3 hrs. practicums to be arranged.

VETERINARY SCIENCE

The courses offered are designed to supplement the instruction in animal husbandry, poultry husbandry, nutrition, agricultural education, parasitology, hygiene and public health. The instruction in veterinary science does not prepare for the practice of veterinary medicine.

The following equipment and activities are under the supervision of members of the staff of the veterinary division and are utilized in instruction.

The Veterinary Clinic at the University Farm, Davis, affords opportunity for students to obtain instruction concerning the more common unsoundnesses and non-infectious diseases of farm animals. The veterinary building at Davis, used exclusively for the conduct of this clinic, is equipped with all that is necessary for advanced work in comparative pathology and bacteriology, including dairy bacteriology.

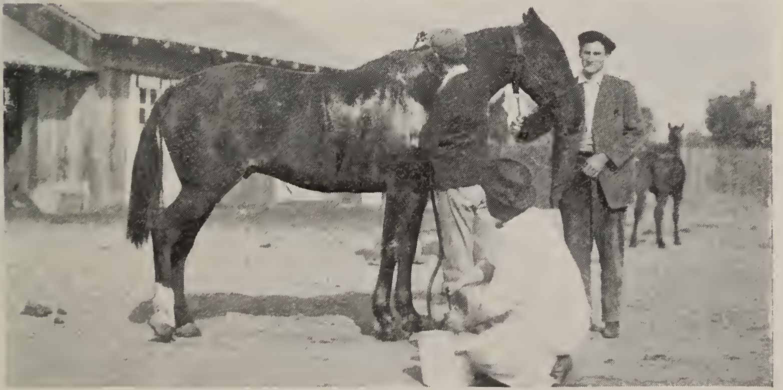
The Veterinary and Dairy Bacteriology Laboratory at Berkeley occupies a separate building and is equipped with all necessary apparatus for advanced work in bacteriology and pathology.

100. **Diseases of Farm Animals.**

Professor Haring and Associate Professor Roadhouse.

The more common diseases of domesticated animals. For students in Berkeley who are unable to take advanced work in veterinary science at the University Farm.

5 hrs., second half-year; 3 units. Lectures, Tu Th, 1; laboratory or clinic, Th, 2–5.



111. **Diseases of Farm Animals.** Assistant Professor Hayes.

The anatomy, physiology and diseases of farm animals; the common diseases of horses, cattle, sheep, and swine receive attention. (Given at Davis.)

6 hrs., second half-year; 4 units. Lectures, W, 1, Th, 1, F, 1; laboratory, Th, 2–5.

The University of California Certified Dairy in Berkeley is a self-supporting institution, and is operated as a first-class market milk dairy, producing certified milk, cream, and skim milk. This dairy is utilized for student instruction. The equipment consists of 120 acres of pasture land, a barn and sanitary milking stable, a milkhouse equipped with a refrigerating plant, sterilizer, bottling machine, and other modern dairy machinery.

The Hog Cholera Serum Laboratory is situated in East Oakland. Anti-hog-cholera serum and virus are manufactured here and sold to farmers at actual cost of production. The sales during the past year were sufficient to immunize 50,000 hogs. About 100 head of swine are maintained at this laboratory for use in making the serum and virus.

The Veterinary Tract is 100 acres of land in Strawberry Cañon, Berkeley, set apart by the Regents of the University to be used in experimental work concerning bovine tuberculosis. The equipment consists of two barns and a cottage. At present 60 head of cattle are maintained here for purposes of research concerning tuberculosis.

Dairy Certification consists of expert work in the supervision of certified dairies for the San Francisco County and Alameda County Medical Milk commissions. This includes bacteriological examinations of milk, semi-monthly inspections of dairies, distributing stations, and wagons, and the semi-annual tuberculin testing of about 1000 dairy cows. Students are given an opportunity to take part in a portion of this work.

GENERAL INFORMATION

EXPENSES OF STUDENTS

Tuition in the University, except in the colleges of Medicine, Pharmacy, and Dentistry, is free to residents of the state. Non-residents of California are charged a tuition of $10 each half-year. The following incidental expenses are to be met:

Gymnasium and Infirmary Fees.—The Gymnasium fee is $2 per half-year and the Infirmary fee is $3 per half-year; both are payable by every student, graduate or undergraduate, before his study card is filed. These fees entitle students to gymnasium and hospital privileges and are not remitted, in whole or in part, for those who may not desire to make use of these privileges. Gymnasium privileges comprise, besides the use of the gymnasium, tennis courts, swimming pool, baths, lockers, wash rooms, etc. The Infirmary fee entitles students, in case of illness, to hospital care (cost of surgical operations not included) or dispensary treatment. One-half of the amount of these fees is returned to students who leave the University during the first half-year before September 1, or during the second half-year before February 1.

Laboratory Fees.—In the laboratories a charge is made for materials actually used. This charge for students in the elementary laboratories amounts to from $5 to $30 per annum.

Military Uniforms.—Every able-bodied male undergraduate student is required to take military exercises during his first two years in the University. A sum sufficient to cover the cost of the uniform, about $18, must be deposited with the Comptroller immediately after admission. Uniforms made by any other than the authorized manufacturer will not be accepted.

Board and lodging may be obtained in private families in or near Berkeley and Oakland at from $25 to $40 a month. They may occasionally be had in return for various personal services in the household. The hours of recitation are such that many students reside in Oakland and San Francisco. The journey from San Francisco requires 40 minutes. The cost of board and lodging in students' boarding clubs ranges from $15 to $20 a month. A few students ''board themselves'' for as low as $15 a month, but this plan of living is not generally to be recommended.

There are no dormitories maintained by the University. Lists of boarding places approved by the University authorities are published at the opening of every session, one list for men and another for women.

The ordinary yearly expenses of a student in the academic departments, including personal expenses, need not exceed $350.

Opportunities for Self-Support.—Board and lodging can often be obtained in exchange for three or four hours of household work daily. Self-supporting students are respected. The Young Men's and Young Women's Christian Associations act as bureaus of information concerning boarding places and opportunities for remunerative employment. The office of the President will also file applications for employment, except for teaching, and assist properly qualified students in securing it. These agencies, however, can do little for students who are not actually on the ground to negotiate for themselves. It is usually so difficult for a stranger to secure remunerative employment from the start that, in general, no one should come to Berkeley expecting to become self-supporting through the University course without having on hand at the beginning sufficient funds to cover the expenses of the first year.

SUMMER SESSION

The Summer Session of six weeks is designed for teachers and other persons who are unable to attend the University during the fall and spring sessions. An Announcement of the Summer Session is issued in March of each year and may be obtained by addressing the Recorder of the Faculties, Berkeley, California.

CALENDAR

1917

August 6, Monday—Applications for admission and credentials of recommended graduates of accredited high schools to be filed with the Recorder of the Faculties.

August 9, Thursday—Academic year begins.

August 9, Thursday–August 14, Tuesday—Matriculation examinations at Berkeley for the Academic Colleges. Filing of applications for admission to advanced and graduate standing and to special status.

August 17, Friday August 18, Saturday; August 20, Monday—All officers of instruction in the colleges at Berkeley keep office hours each day from 9 a.m. to 12 m. Also on Friday and Monday from 2 to 4:30 p.m.

August 17, Friday–August 18, Saturday—Admission certificates issued to intrants; registration of new students, graduate and undergraduate, from 8:30 a.m. to 4:30 p.m., in the grove north of California Hall.

August 20, Monday—Registration of old students, graduate and undergraduate, 8:30 a.m. to 5 p.m., in the grove north of California Hall.

August 21, Tuesday—Instruction in all classes begins at 8:07 a.m.

September 5, Wednesday—Last day for filing applications and programmes in candidacy for doctors' degrees, masters' degrees, and teachers' recommendations to be conferred December, 1917; office of the Dean of the Graduate School, 217 California Hall. All signatures required upon these applications must be secured in advance.

October 31, Wednesday—Last day for filing in final form with the instructors in charge theses for Ph.D. to be conferred December, 1917.

November 28, Wednesday—Last day for filing in final form with the instructors in charge theses for masters' degrees to be conferred December, 1917.

November 29, Thursday–December 1, Saturday—Thanksgiving recess of three days.

December 1, Saturday—Last day for applications for the accrediting of secondary schools for 1917–18.

December 11, Tuesday–December 21, Friday—Midyear examinations in the Academic Colleges.

December 23, Sunday–January 5, Saturday—Christmas vacation in the Academic Colleges.

1918

January 7, Monday—Applications for admission in January and applications for cards of admission to the matriculation examinations in January to be filed.

January 7, Monday—Second half-year in the Academic Colleges begins.

January 8, Tuesday–January 12, Saturday—Examinations in the Academic Colleges for the removal of matriculation deficiencies.

January 14, Monday—Registration of students in the Academic Colleges for courses of the second half-year.

January 15, Tuesday—Instruction begins at 8:07 a.m.

January 23, Wednesday—Last day for filing applications and programmes in candidacy for doctors' degrees, masters' degrees, and teachers' recommendations to be conferred May, 1918; office of the Dean of the Graduate School, 217 California Hall. All signatures required upon these applications must be secured in advance.

March 1, Friday—Last day for applications for graduate scholarships for 1918–19.

March 15, Friday—Last day for applications for undergraduate scholarships for 1918–19.

March 23, Saturday—Charter Day. Exercises in the Greek Theatre or Harmon Gymnasium. Faculty Research Lecture.

March 30, Saturday—Last day for filing in final form with the instructors in charge theses for Ph.D. to be conferred May, 1918.

April 24, Wednesday—Last day for filing in final form with the instructors in charge theses for masters' degrees to be conferred May, 1918.

May 1, Wednesday—Candidates for Ph.D. file with the Recorder written report of work performed during the year.

April 29, Monday–May 11, Saturday—Annual examinations in the Academic Colleges. Annual examinations for seniors begin Thursday, April 25.

May 13, Monday—Class Day.

May 15, Wednesday—The Fifty-fifth Commencement.

May 16, Thursday–August 7, Wednesday—Vacation of twelve weeks in the Academic Colleges.

June 24, Monday–August 3, Saturday—Summer Session of the Academic Colleges.

August 5, Monday—Applications for admission and credentials of the recommended graduates of accredited high schools to be filed with the Recorder of the Faculties.

August 8, Thursday—Academic year begins.
August 8, Thursday–August 13, Tuesday—Matriculation examinations at Berkeley for the Academic Colleges. Filing of applications for admission to advanced and graduate standing and to special status.
August 16, Friday; August 17, Saturday; August 19, Monday—All officers of instruction in the colleges at Berkeley keep office hours each day from 9 a.m. to 12 m.; also on Friday and Monday from 2 to 4:30 p.m.
August 16, Friday–August 17, Saturday—Admission certificates issued to intrants; registration of new students, graduates and undergraduates, from 8:30 a.m. to 4:30 p.m., in the grove north of California Hall.
August 19, Monday—Registration of old students, graduate and undergraduate, 8:30 a.m. to 5 p.m., in the grove north of California Hall.
August 20, Tuesday—Instruction in all classes begins at 8:07 a.m.
September 4, Wednesday—Last day for filing applications and programmes in candidacy for doctors' degrees, masters' degrees, and teachers' recommendations to be conferred December, 1918; office of the Dean of the Graduate School, 217 California Hall. All signatures required upon these applications must be secured in advance.
October 30, Wednesday—Last day for filing in final form with the instructors in charge theses for Ph.D. to be conferred December, 1918.
November 27, Wednesday—Last day for filing in final form with the instructors in charge theses for masters' degrees to be conferred December, 1918.
November 28, Thursday–November 30, Saturday—Thanksgiving recess of three days.
November 30, Saturday—Last day for applications for the accrediting of secondary schools for 1918–19.
December 10, Tuesday–December 20, Friday—Midyear examinations in the Academic Colleges.
December 22, Sunday–January 4, Saturday—Christmas vacation in the Academic Colleges.

1919
January 6, Monday—Applications for admission in January and applications for cards of admission to the matriculation examinations in January to be filed.
January 6, Monday—Second half-year in the Academic Colleges begins.
January 7, Tuesday–January 11, Saturday—Examinations in the Academic Colleges for the removal of matriculation deficiencies.
January 13, Monday—Registration of students in the Academic Colleges for courses of the second half-year.
January 14, Tuesday—Instruction begins at 8:07 a.m.

UNIVERSITY FARM SCHOOL CALENDAR, 1917–1918

1917
September 14, Friday–September 15, Saturday—Entrance examinations and registration of new students.
September 17, Monday—Registration of Juniors and Seniors.
September 18, Tuesday—Class work begins; Assembly, all students, 11 a.m.
November 29, Thursday—Thanksgiving Day; no classes.
December 12, Wednesday–December 14, Friday—Final examinations.
December 15, Saturday—Christmas vacation begins.

1918
January 2, Wednesday—Registration for second semester.
January 3, Thursday—Class work begins; Assembly, all students, 11 a.m.
February 22, Friday—Washington's Birthday; assembly at 10 a.m.
March 29. Thursday—Easter recess begins, 12 m.
April 2, Tuesday—Class work resumed. 8 a.m.
April 20, Saturday—University Farm Picnic.
May 21, Tuesday–May 23, Thursday—Examinations.
May 24, Friday—Commencement, 2 p.m.
September 13, Friday–September 14, Saturday—Entrance examinations and registration of new students.
September 16, Monday—Registration of Juniors and Seniors.
September 17, Tuesday—Class work begins; Assembly, all students, 11 a.m.
November 28, Thursday—Thanksgiving Day; no classes.
December 11, Wednesday–December 13, Friday—Final examinations.
December 14. Saturday—Christmas vacation begins.

University Farm School students, 1916.

UNIVERSITY FARM SCHOOL

The purpose of the University Farm School is to furnish technical training in agriculture to young men who are not prepared or do not wish to pursue a college course in agriculture. It does not prepare nor is it intended to prepare students for entrance to college.

The basis of entrance to the Farm School is ability to pursue with profit the assigned course of study and to maintain the prescribed standard of class excellence. Applicants are not admitted below the age of 18 years, unless they are graduates of a high school of recognized standing. Those who are not graduates of a high school are required to pass entrance examinations in English composition and arithmetic. Graduates of an accredited high school, or those who have done any work for which they desire credit, should submit a transcript of their record on a blank form secured from the University Farm, showing the work done and grade attained in each subject. This transcript should be properly signed by the principal.

Application for admission should be accompanied by the necessary credentials. They should be sent to the Dean of the University Farm School so as to reach him, if possible, before September 1. Arrangements for board and room on the farm should also be made in advance. Intrants will not be admitted to full standing until after satisfactory completion of one semester's work.

Evidence of effective vaccination is a condition of entrance.

Evidence of good moral character is required from every applicant.

Substantially all of the instructional work taught the second half-year is a continuation of that taught the first half-year and is dependent on it. Unless students have had instruction which is equivalent to that given the first half-year, it would be better for them to wait and enter at the opening of the school year in September than to enter at the midyear.

EXPENSES

Board may be secured in the school dining hall on the cafeteria plan.

Rooms in the dormitories, one in a room, are $6 or $7 per month, and two in a room $4 or $5 per month each. Dormitory rooms contain necessary furniture, but students must provide all linen and blankets. Room rent covers the weekly laundering of linen. In a portion of the rooms bed linen and blankets are furnished at an additional expense of $2 per month. To a limited extent, board and room may be secured in the village of Davis at substantially the same prices.

Books and regular school supplies cost from $15 to $25 per year. *Special clothing,* such as white suits for creamery and dark overalls and jumpers for shop and field work, cost $1 each, and may be purchased locally if desired.

Fees.—Tuition is free. A registration fee of $5 per semester to cover incidental expenses is charged each student. This is $15 to non-residents of the state.

A late registration fee of $2 is required of every student who applies for registration at any other time than the date specified in the calendar.

A fee of 5 cents per day for late payment of board and room after the 10th of the month is required of each student.

Breakage deposits: A $5 deposit is required of each student. After deducting breakage and loss in laboratories. the remainder will be refunded at the end of the semester.

The expenses necessary for an eight-month year vary from $222 to $276, as indicated by the following table:

Table board, per month $20, per year	$160
Room rent, one in room, per month $6 to $7, per year	56
Room rent, two in room, each per month $4 to $5	
Books and other supplies, per year $15 to	25
Registration fee, for residents of state, per year	10
Membership in Associated Student Body, per year	5
Necessary expense for residents of state	256
Registration fee for non-residents of state additional, per year	20
Necessary expense for non-residents of state, per year	$276

Opportunities for earning part of one's expenses by labor about the farm and school are much less than the demand for such work. Students who are good workers do sometimes earn from one-fourth to one-half of the necessary expense. Students should not enter without having available at least half or two-thirds of the necessary funds for the year's expenses.

UNIVERSITY FARM SCHOOL COURSES OF STUDY

The following study list has been planned after careful consideration of the educational preparation of students entering and the demands which it has shown they must meet later in practical commercial growing and handling of grains, fruits, and livestock as a business, and students will be expected to follow the courses in the order outlined, as most subjects are dependent on the foundation subjects preceding.

Horticultural students will take the horticultural alternatives including Ent. 01, first semester, freshman or junior years, and D. I. 01, first semester, junior or senior years.

Animal Husbandry students will take Ent. 01, first or second semester, junior year, and *Hort. 06, second semester, senior year.

The Library, University Farm.

NOTE.—The credit for work is estimated in terms of "units." One hour per week of classroom work with necessary preparation, or two hours of laboratory or practice work, throughout the school year, is equivalent to two units of credit; but because the semesters are of unequal length a fall semester course is reckoned at either 1½ or 3 units and a spring semester course at either 2½ or 5 units, according to the number of hours demanded each week. Exceptions to this rule are Hygiene, Music, and Physical Education, as noted in the following pages.

Laboratory periods, two 2 hr., one 4 hr or two 4 hr. periods.

The normal schedule for the fall semester contains 15 units, for the spring semester 25 units, without Music, Physical Education, or Farm Practice.

Subjects preceded by (†) required for graduation.

Subjects preceded by (*) required for graduation of students not specializing in horticulture.

Laboratory periods are indicated by parentheses ( ).

REQUIREMENTS FOR GRADUATION

Requirements for graduation are the completion of three years' work of 120 credits in approved subjects, the passing of Examination A, and presence at Commencement Exercises.

EXAMINATION "A"

Before graduation every student is expected to show a reasonable ability to harness and drive a double team and single horse, to take apart and reassemble double and single harness, to handle a pitchfork, shovel, axe, and Jackson fork, to handle a walking plow and a Fresno scraper, to milk and to do other common manual work about a farm.

It is well to pass this examination as early in the course as arrangements can be made at the Dean's Office.

STUDY LIST FOR STUDENTS WITHOUT HIGH SCHOOL CREDIT

FRESHMAN YEAR

Note electives, p. 66

First Semester				*Second Semester*			
†A. E. 01. Agr. Drawing		(2)	1½	†A. E. 04. Forging		(2)	2½
†A. H. 01. Stock Judging		(2)	1½	†A. H. 02. Stock Judging		(2)	2½
†Bot. 01. Plant Life	2	(2)	3	†Bot. 02. Economic Plants	2	(2)	5
†Chem. 01. Elements of Chemistry	2	(2)	3	†Chem. 02. Chem. Analysis	2	(2)	5
†E. and E. 01. Agricultural Literature	4		3	†E. and E. 02. Business English	4		5
†Hyg. 01. Personal Hyg.	1		1	†Hyg. 02. First Aid	1		1
†Math. 01. Arithmetic	4		3	†Math. 02. Algebra and Geometry	4		5

Note electives, p. 66

JUNIOR YEAR

First Semester			
†A. E. 03. Building Const.		(2)	1½
A. H. 03. Breeds and Types	2	(2)	3
Or Hort. 01. Plant Prop.	2	(2)	
†D. I. 01. Elements of Dairying	2	(2)	3
†Math. 03. Applied Math.	4		3
P. H. 01. Breeds and Housing	2	(2)	3
†*Or* Ent. 01. Insect Pests	2	(2)	
†So. 01. Soils	2	(2)	3

Second Semester			
†Agr. 02. Field Crops	3	(1)	5
A. E. 02. Farm Struct.		(2)	2½
Or A. E. 03A. Building Construction		(2)	
A. H. 04. Breeds and Types	2	(2)	5
Or Hort. 02. Fruit Prod.		(4)	
D. I. 02. Dairy Practice	2	(2)	5
Or Oler. 02. Vegetable Gardening	2	(2)	
†Ent. 01A. Insect Pests	2	(2)	
Or Ent. 02. Bee Culture	2	(2)	
P. H. 02. Care and Feed.	2	(2)	
Or Math. 04. Physics and Trigonometry	4		

SENIOR YEAR

First Semester

†Agr. 03. Farm Manag.	2	(2)	3
†A. E. 05. Farm Machinery	2	(2)	3
A. H. 05. Stock Management	2	(2)	3
Or D. I. 03. Market Milk	2	(2)	
Or Hort. 03. Harvesting and Marketing	2	(2)	
†Math. 05. Surveying	2	(2)	3
V. S. 01. Veterinary Sci.	2	(2)	3
Or Vit. 01. Viticulture	2	(2)	
Or P. H. 01. Breeds and Housing	2	(2)	
Or V. S. 03. Bacteriology	2	(2)	
Or Ent. 03. Animal Parasites	2	(2)	

Second Semester

A. H. 06. Feeding	4		5
Or Hort. 02. Fruit Production		(4)	
D. I. 04. Dairy Manufactures	2	(2)	5
Or Hort. 08. Citriculture	2	(2)	
Or P. H. 04. Incubation and Brooding		(4)	
†Irrig. 02. Irrigation Prac.	2	(2)	5
†E. and E. 05A. Rural Economics	4		5
*Hort. 06. General Pomology	2	(2)	5
Or A. E. 06. Advanced Farm Machinery		(2)	
Or Vit. 02. Viticulture Practice	2	(2)	
Or Oler. 04. Advanced Vegetable Gardening	2	(2)	
Or P. H. 02. Care and Feeding	2	(2)	
Or Ent. 04. Plant Insects	2	(2)	

STUDY LIST FOR STUDENTS HAVING HIGH SCHOOL CREDIT IN ENGLISH, MATHEMATICS, AND CHEMISTRY

JUNIOR YEAR

First Semester

†A. E. 01. Agr. Drawing		(2)	1½
†*Or* A. E. 03. Building Construction		(2)	
†A. H. 01. Stock Judging		(2)	1½
†Bot. 01. Plant Life	2	(2)	3
†*Or* E. and E. 05. Rural Economics	4		
†D. I. 01. Elements of Dairying	2	(2)	3
Or Hort. 01. Plant Prop.	2	(2)	
†Math. 03. Applied Mathematics	4		3
Or P. H. 01. Breeds and Housing	2	(2)	
Or Ent. 01. Insect Pests	2	(2)	
†Hyg. 01. Personal Hyg.	1		1
†So. 01. Soils	2	(2)	3

Second Semester

†Agr. 02. Field Crops	3	(1)	5
†A. H. 02. Stock Judging		(2)	2½
†Bot. 02. Economic Plants	2	(2)	5
Or Bot. 04. Farm Botany	2	(2)	
D. I. 02. Dairy Practice	2	(2)	5
Or Hort. 02. Fruit Production		(4)	
†Ent. 01A. Insect Pests	2	(2)	5 or 2½
†*Or* A. E. 04. Forging		(2)	
†*Or* A. E. 03A. Building Construction		(2)	
Or A. E. 02. Farm Struc.		(2)	
Math. 04. Physics & Trig.			5
Or P. H. 02. Care and Feeding	2	(2)	
Or Oler. 02. Vegetable Gardening	2	(2)	

SENIOR YEAR

First Semester			
†Agr. 03. Farm Manag.	2	(2)	3
A. H. 03. Breeds and Types	2	(2)	3 or 1½
†*Or* D. I. 01. Elements of Dairying	2	(2)	
Or Hort. 03. Harv. & Mrkt.	2	(2)	
†A. E. 05. Farm Machinery	2	(2)	3
A. H. 05. Stock Management	2	(2)	3
Or P. H. 03. Fancy Judging	2	(2)	
Or V. S. 01. Veterinary Science	2	(2)	
Or V. S. 03. Bacteriology	2	(2)	
Or D. I. 03. Market Milk	2	(2)	
Or Vit. 01. Viticulture	2	(2)	
†Math. 05. Surveying	2	(2)	3
Or Ent. 03. Animal Parasites	2	(2)	3

Second Semester			
A. H. 04. Breeds and Types	2	(2)	5
Or Vit. 02. Vit. Practice	2	(2)	
A. H. 06. Feeds and Feeding	4		5
Or Hort. 08. Citriculture	2	(2)	
†E. and E. 05A. Rural Economics	4		2½ or 5
Or A. E. 06. Advanced Farm Machinery	1	(1)	
Or A. E. 02. Farm Struc.	2		
Or Math. 06. Advanced Surveying		(2)	
Or P. H. 04. Incubation and Brooding		(4)	
Or D. I. 04. Dairy Manufactures	2	(2)	
Or Oler. 02. Vegetable Gardening	2	(2)	
Or Oler. 04. Advanced Vegetable Gardening	2	(2)	
*Hort. 06. General Pomol.	2	(2)	5
Or Hort. 02. Fruit Production	2	(2)	
†Irrig. 02. Irrig. Practice	2	(2)	5
Or Ent. 04. Plant Insects	2	(2)	5

ELECTIVES

Which may be taken subject to approval of Schedule Committee

First Semester		*Second Semester*	
F. P. 01. Farm Practice	1½	F. P. 02. Farm Practice	3
Mu. 01. Orchestra	1	Mu. 02. Orchestra	1½
Mu. 03. Chorus Singing	1	Mu. 04. Chorus Singing	1½
Mu. 05. Chorus Leading	1	Mu. 06. Chorus Leading	1½
P. E. 01. Outdoor Exercise	1	P. E. 02. Outdoor Exercise	1½

DESCRIPTION OF COURSES OF STUDY

AGRICULTURAL ENGINEERING

Professor DAVIDSON, Mr. BELTON, Mr. INGRIM, Mr. FLETCHER

†A. E. 01. **Agricultural Drawing.** First semester. 1½ units.
Two laboratories.
Prerequisite to, or accompanying, A. E. 03. Required for graduation.
Lettering, graphic method, practice in drawing working plans and detail of construction of farm buildings.

A. E. 02. **Farm Structures.** Second semester. 2½ units.

Two laboratories.

Prerequisite: A. E. 03.

Planning of farm buildings; construction, convenience, lighting, ventilation, sanitation, and cost; materials, plans, and specifications.

†A. E. 03. **Building Construction.** First semester. 1½ units.

Two laboratories.

Prerequisite or accompanying: A. E. 01. Prerequisite to A. E. 02. Required for graduation.

Use of tools; carpentry; practice in building foundations, cutting rafters, framing; erection of small buildings; concrete work.

†A. E. 04. **Forging.** Second semester. 2½ units.

Two laboratories.

Prerequisite to A. E. 05. Required for graduation.

Forging, welding, and tempering; repair of farm machinery; sharpening plowshares, harrow teeth, etc.; tire and axle setting; making hooks, clevises, bolts, etc.

†A. E. 05. **Farm Machinery.** First semester. 3 units.

Two lectures; two laboratories.

Prerequisite A. E. 04, Math. 03, and senior standing. Required for graduation.

Principles underlying the construction, adjustment, operation, and repair of tillage, seeding, haying, harvesting, and threshing machinery; farm tractors, practice in setting up, operating, adjusting, and testing; babbiting, shaft erecting, belt splicing, and other similar exercises; expense of operation.

A. E. 06. **Farm Machinery (continued).** Second semester. 2½ units.
One lecture; one laboratory.
Prerequisite: A. E. 05.
The production and utilization of power for agricultural purposes; the horse as a motor; the gas engine and the electric motor; the tractor. This course also includes a study of power pumps. Practice in the adjusting, operation, repair, and testing of motors and pumps.

A. E. 08. **Dairy Mechanics.** Second semester. 2½ units.
Two laboratories with lectures.
Conducted in co-operation with Division of Dairy Industry.
To be taken by students specializing in Dairy Industry in place of A. E. 05.
Lectures on management and repair of steam boilers and gas engines, electric motors, pumps, refrigerating machinery, creamery machinery, also construction of cold storage rooms; practice work in soldering, babbiting, pipe fitting, erection of shafting, flue fitting and testing, and actual operation of creamery power plant.

AGRONOMY

Professor GILMORE, Assistant Professor R. L. ADAMS, Assistant Professor MADSON, Assistant Professor KENNEDY, Mr. HENDRY.

†Agr. 02. **Field Crops.** Second semester. 5 units.
Three lectures; one laboratory.
Prerequisite: So. 01; prerequisite or accompanying: Bot. 02 or 04. Prerequisite to Agr. 03. Required for graduation.
Principal types and varieties, methods of growing, handling, and improving common grains, forage, and root crops; laboratory practice in judging crops and testing seeds for purity.

†Agr. 03. **Farm Management.** First semester. 3 units.
Two lectures; two discussion laboratories.
Prerequisite: So. 01 and Agr. 02, and senior standing. Required for graduation.
A study of the business principles of farming; the organization and conduct of a farm; the planning of cropping systems; the handling of capital, labor, stock, and machinery.

ANIMAL HUSBANDRY

Professor True, Assistant Professor Thompson, Assistant Professor Miller, Mr. Voorhies.

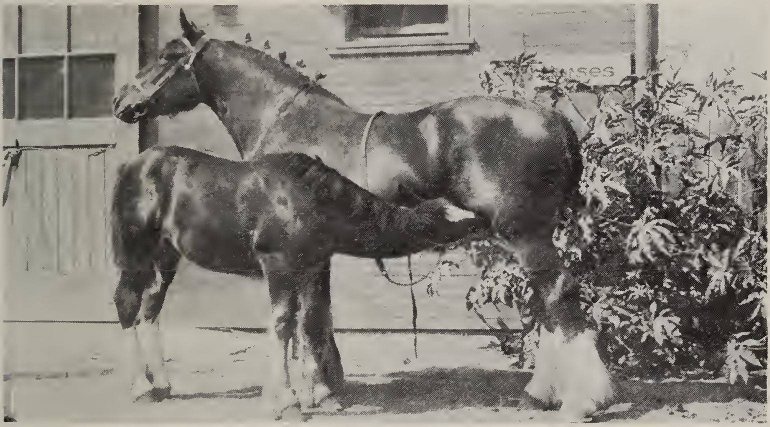
†A. H. 01. **Stock Judging.** First semester. 1½ units.

Two laboratories.

Prerequisite to all following A. H. courses. Required for graduation.

Includes the judging of different market classes of beef cattle and of hogs, both lard and bacon.

Textbook required.



†A. H. 02. **Stock Judging.** Second semester. 2½ units.

Two laboratories.

Prerequisite: A. H. 01. Prerequisite to all following A. H. courses. Required for graduation.

Includes judging of different market classes of light and heavy horses, sheep, both mutton and wool, and dairy cattle.

Textbook required.

A. H. 03. **Breeds and Types.** First semester. 3 units.

Two lectures; two laboratories.

Prerequisite: A. H. 01 and 02. Prerequisite to A. H. 04.

Judging of representatives of different breeds of beef cattle and hogs according to their official standards; a study of their origin, history, characteristics, and adaptability to various conditions.

A. H. 04. **Breeds and Types.** Second semester. 5 units.

Two lectures; two laboratories.

Prerequisite: all preceding A. H. courses.

Judging of representatives of different breeds of horses, sheep, and dairy cattle according to their official standards; a study of their origin, history, characteristics, and adaptability to various conditions.

A. H. 05. **Stock Management.** First semester. 3 units.

Two lectures; two laboratories.

Prerequisite: A. H. 01 and 02.

The practical care, feeding, and management of all classes of stock.

One laboratory period to be spent in work at the barns. Hours to be arranged.

A. H. 06. **Feeds and Feeding.** Second semester. 5 units.

Four lectures.

Prerequisite: A. H. 01 and 02 and Chem. 01 and 02. Feeding stuffs, as related to the economic production of meat, milk, and work; methods of preparing and feeding of all classes and ages of livestock.

BOTANY

Mr. Pope

†Bot. 01. **Plant Life.** First semester. 3 units.

Two lectures; two laboratories.

Prerequisite to Bot. 02. Required for graduation.

Lectures, experiments, and exercises showing the formation, structure, and necessary conditions for the growth of plants; seed germination tests; collection and identification of weed seeds, and methods of controlling weeds.

†Bot. 02. **Economic Botany.** Second semester. 5 units.

Two lectures; two laboratories.

Prerequisite: Bot. 01. Required for graduation.

Fungus diseases and identification of economic plants and weeds. Each student is expected to develop a garden plot illustrating the botanical relationship of several groups of plants and methods of plant growth.

Bot. 04. **Farm Botany.** Second semester. 5 units.

Two lectures; two laboratories.

Required of all students receiving credit for high school botany.

Note.—Bot. 02 or Bot. 04 must either precede or accompany Agr. 02 (Field Crops).

CHEMISTRY

MR. ARNOLD

†Chem. 01. **Elements of Chemistry.** First semester. 3 units.

Two lectures; two laboratories.

Prerequisite to Chem. 02. Required for graduation.

Principles of chemistry with their application to such matters as the action of sulphur in bleaching fruit, of disinfectants, of fertilizers.

†Chem. 02. **Chemical Analysis.** Second semester. 5 units.

Two lectures; two laboratories.

Prerequisite: Chem. 01. Prerequisite to A. H. 06, So. 01, and all D. I. courses. Required for graduation.

Continuation of Chem. 01; experiments with soils, alkalies, food products, and other substances having particular reference to farm practice.

CITRICULTURE

Professor COIT, Assistant Professor CONDIT

Hort. 08. **Citriculture.** Second semester. 5 units.

Two lectures; two laboratories.

Prerequisite: Bot. 01 and 02 and Hort. 01. Senior standing required.

This course covers in detail the history, propagation, culture, and handling of citrus fruits, with practical work in planting seeds and seedlings, budding nursery stock, balling trees, use of cover crops, operating orchard heaters, judging varieties, irrigating orchard trees, and applying fertilizers. Considerable time is spent in the study of the fig, olive, avocado, loquat, persimmon, and other semi-tropical fruits.

DAIRY INDUSTRY

Mr. Baird, Mr. Denny, Mr. Bisbee

†D. I. 01. **Elements of Dairying.** First semester. 3 units.

Two lectures; one 4-hour laboratory.

Prerequisite: Chem. 01 and 02. Prerequisite to D. I. 02 and 03. Required for graduation.

A general study of the composition, properties, care, and handling of milk; principles and application of the Babcock test and acidity tests; construction and operation of cream separators; ripening and churning of cream under farm conditions.

D. I. 02. **Dairy Practice.** Second semester. 5 units.

Two lectures; one 4-hour laboratory.

Prerequisite: D. I. 01. Prerequisite to D. I. 04.

A study of the commercial tests for butter fat, acidity, moisture, salt, and adulteration of dairy products; principles and practice of creamery butter making; pasteurization, ripening, and churning of cream; propagation of starters; use of power separators; scoring of dairy products; study and practice in making California and cheddar types of cheese.

D. I. 03. **Market Milk and Fancy Cheese Making.** First semester. 3 units.

Two lectures; one 4-hour laboratory.

Prerequisite: D. I. 01.

Conditions affecting quality of milk for direct consumption; requisites for producing different grades of milk; tests for quality and adulteration; pasteurization, standardizing, and bottling milk for distribution; inspecting dairies and milk plants; principles of and practice in the preparation of soft and fancy types of cheese.

D. I. 04. **Dairy Manufactures.** Second semester. 5 units.

Two lectures; one 4-hour laboratory.

Prerequisite: D. I. 02.

Advanced work in creamery butter making and cheese making; creamery accounting; creamery management and organization; creamery machinery and dairy mechanics; instruction and practice in the making of plain and fancy ice cream, ices, and sherberts.

ENGLISH AND ECONOMICS

Mr. Kelley

†E. and E. 01. **Agricultural Literature.** First semester. 3 units.

Four lecture periods.

Required for graduation.

Introduction to technical literature, with emphasis on accuracy of understanding; practice in taking lecture notes, in summarizing agricultural publications, and in preparing reports; increasing familiarity with technical terms; debating on agricultural and current topics.

†E. and E. 02. **Business English.** Second semester. 5 units.

Four lecture periods.

Required for graduation.

Training in business correspondence, with emphasis on form, usage, spelling, punctuation, and choice of words; practice in oral and written presentation of student's own thought.

E. and E. 03. **English Practice.** First semester.

Hours and units by arrangement.

Elective, but may be required of candidates for graduation whose written work in technical courses is poor.

†E. and E. 05. **Rural Economics.** First semester. 3 units.

Four lectures, with discussions and debates.

Required for graduation.

Elements of economics; the farmer's business problems in relation to land, markets, banking, and credits; rural social problems and the fundamentals of good citizenship.

E. and E. 05A. **Rural Economics.** Second semester. 5 units.

Repetition of E. and E. 05 for benefit of students unable to take it in the first semester.

ENTOMOLOGY

Professor Woodworth, Mr. deOng

†Ent. 01. **Insect Pests.** First semester. 3 units.

Two lectures; two laboratories.

Prerequisite to Ent. 03 and 04. Required for graduation.

The structure, classification, and life history of insect pests commonly attacking orchard and field crops and farm animals, and the remedies available for their control.

Ent. 01A. **Insect Pests.** Second semester. 5 units.

Repetition of Ent. 01 for benefit of students unable to take it in the first semester.

Ent. 02. **Bee Keeping.** Second semester. 5 units.

Two lectures; two laboratories.

Elective.

Practice in the handling of bees and a study of the apparatus used in modern bee keeping.

Ent. 03. **Animal Parasites.** First semester. 3 units.

Two lectures; two laboratories.

Prerequisite: Ent. 01.

A study of the life history, habits, and classification of insect pests and internal parasites affecting man and livestock.

Laboratory and field practice.

Ent. 04. **Plant Insects.** Second semester. 5 units.

Two lectures; two laboratories.

Prerequisite: Ent. 01.

Life history, habits, and classification of insects affecting the orchard, garden, and field crops; control measures.

Field practice.

FARM PRACTICE

Mr. Tavernetti

F. P. 01. **Farm Practice.** First semester. 1½ or 3 units.

One or two 4-hour periods of farm work.

Regular instruction in such common farm operations as may be in season at the time, with particular reference to developing skill in the use of a pitchfork, shovel, axe, Jackson fork, the taking apart and reassembling of harness, harnessing and driving of single horse and double team; practice in use of walking plow, Fresno scraper, and such other operations as the work in progress permits, including building fences and repair work.

F. P. 02. **Farm Practice.** Second semester. 2 or 4 units.

(Same as F. P. 01.)

HORTICULTURE

Professor Stubenrauch, Associate Professor Howard, Assistant Professor Taylor, Mr. Hendrickson, Mr. Tufts, Mr. Schmidt, Mr. Sweet.

Hort. 01. **Plant Propagation.** First semester. 3 units.

Two lectures; two laboratories.

Junior standing is required.

Principles and practices involved in the propagation of cultivated plants by means of cuttings, budding, grafting, layering, seeds, separation, and division; practice work in all the common nursery operations.

Hort. 02. **Fruit Production.** Second semester. 5 units.

Two 4-hour laboratories.

Prerequisite: Hort. 01.

Junior standing required.

Principles of deciduous fruit growing; location of orchard business; sites, soils, planting, cultivation, irrigation, pollination, pruning, spraying, and frost protection; practice work in laboratory and orchard.

Hort. 03. **Harvesting and Marketing.** First semester. 3 units.

Two lectures; one 4-hour laboratory.

Senior standing required.

Variety studies with deciduous fruits and nuts; principles of harvesting, grading, packing, and marketing; exercises in the field and packing house.

Hort. 06. **General Pomology.** Second semester. 5 units.

Two lectures; one 4-hour laboratory.

Required for graduation of students not specializing in horticulture. Not open to students majoring in horticulture. Senior standing required.

A general survey of the more important principles and practices involved in the growing of deciduous, citrus, and vine fruit crops, with special reference to California conditions.

HYGIENE

Dr. Bates

†Hyg. 01. **Rural and Personal Hygiene.** First semester. 1 unit.

One lecture.

Prerequisite to Hyg. 02. Required for graduation.

Lectures on personal hygiene, including the importance of ventilation and exercise; human anatomy and physiology; rural hygiene; sexual hygiene; control of insect carriers of disease.

†Hyg. 02. **First Aid.** Second semester. 1 unit.

One lecture.

Prerequisite: Hyg. 01. Required for graduation.

A course in the recognition and emergency treatment of common accidents. Students completing this course will, if desired, be recommended to the American Red Cross for First Aid Certificate. (Fee for certificate, 50 cents, which must accompany recommendation.)

IRRIGATION

Assistant Professor Beckett

†Irrig. 02. **Irrigation Practice.** Second semester. 5 units.

Two lectures; one 4-hour laboratory.

Prerequisites: Math. 05 and So. 01.

Preparation of land for irrigation; water requirements of field crops and orchards and application of water; design and construction of farm laterals, delivery gates, reservoirs, concrete pipe lines, pumping units, etc.; methods and devices for measurement of water; simple problems of drainage.

MATHEMATICS

Mr. Titus

†Math. 01. **Farm Arithmetic.** First semester. 3 units.

Four lectures.

Prerequisite to all following mathematics courses. Required for graduation.

Application of arithmetic through fractions and percentage to the estimating of building materials, averages, creamery problems, and to the mixing of rations, fertilizers, etc.

†Math. 02. **Algebra.** Second semester. 5 units.

Four lectures.

Prerequisite: Math. 01. Prerequisite to all following mathematics courses. Required for graduation.

Fundamental principles and formulas and solution of simple equations, with illustrative applications.

†Math. 03. **Geometry.** First semester. 3 units.

Four lectures.

Prerequisite: Math. 02. Prerequisite to all following mathematics courses and to A. E. 05 and Irrig. 02. Required for graduation.

The fundamental propositions of geometry with simple applications.

Math. 04. **Physics and Trigonometry.** Second semester. 5 units.
Four lectures.
Prerequisite: Math. 03. Prerequisite to A. E. 06 and Math. 06.
Solution of triangles with applications; principles of "simple machines"; flow of water in pipes and ditches; work and power problems; principles of the dynamo and motor.

†Math. 05. **Surveying.** First semester. 3 units.
Two lectures; one 4-hour laboratory.
Prerequisite: Math. 03. Prerequisite to Irrig. 02. Required for graduation.
Study of the principles of surveying, especially chain surveying; profile leveling and contour mapping.

Math. 06. **Advanced Surveying.** Second semester. 2½ units.
One 4-hour laboratory.
Prerequisite: Math. 05.
Transit work, cross-sectioning, stadia topography, etc.

MUSIC

Mr. Henley and Mr. Schmidt

Mu. 01. **Orchestra.** First semester. 1 unit.
One practice and participation in public performance.
Admission subject to tryouts and approval of leader.
A study of orchestral music designed to give the student ensemble practice and to improve his score reading, time, and expression. A special effort will be made to bring about a better appreciation of high-class music. Several concerts will be given during the year, as well as opportunity to play at other entertainments.

Mu. 02. **Orchestra.** Second semester. 1½ units.
Continuation of Mu. 01.

Mu. 03. **Chorus Singing.** First semester. 1 unit.
One practice and participation in public performance.
Instruction and practice in singing choral music, correct enunciation, breathing and use of the voice. Large and small choruses and quartettes will be organized and trained. Encouragement of the spirit of music in the community will be a feature of the work.

Mu. 04. **Chorus Singing.** Second semester. 1½ units.
Continuation of Mu. 03.

Mu. 05. **Chorus Leading.** First semester. 1 unit.
One lecture and assigned practices.
Prerequisite: Mu. 03 or 04.
Instruction in the theory and art of organizing and leading choruses, choirs, congregational and communal singing, selecting and grouping of voices, choice of music and arrangement of programmes.

Mu. 06. **Chorus Leading.** Second Semester 1½ units.
Continuation of Mu. 05.

OLERICULTURE

Assistant Professor Rogers

Oler. 02. **Vegetable Gardening.** Second semester. 5 units.
Two lectures; two laboratories.
Prerequisite: Junior standing required.
Principles of vegetable gardening and methods of fertilizing, planting, cultivating, irrigating, and handling the common vegetables for home use or market, and their adaptation to intercropping in young orchards.

Oler. 04. **Special Crops.** Second semester. 5 units.
Two lectures; two laboratories.
Prerequisite: Oler. 02.
Advanced work with special crops and problems.

PHYSICAL EDUCATION

Mr. Harmon

P. E. 01. **Outdoor Exercise.** First semester. 1 unit.
Three hours per week.
Systematic exercise in outdoor sports, including baseball, football, track work, tennis, basket-ball, handball, soccer, and swimming.

P. E. 02. **Outdoor Exercise.** Second semester. 1 unit.
Same as P. E. 01.

POULTRY HUSBANDRY

Associate Professor Dougherty and Mr. Lloyd

P. H. 01. **Breeds and Breeding.** First semester. 3 units.
Two lectures; two laboratories.
Prerequisite: Math. 02, Eng. 02. A. E. 01 must precede or accompany P. H. 01. Full junior standing required.
A study of the more popular breeds and varieties, their distinctive characteristics and utility qualities; the laws of breeding and their application to the building up of flocks of heavy layers or choice meat fowls; natural and artificial incubation and brooding; the selection of fowls for constitutional vigor; selecting, grading, and studying the structure of eggs.

P. H. 02. **Feeding and Management.** Second semester. 5 units.

Two lectures; two laboratories.

Prerequisite: P. H. 01; prerequisite or accompanying: Chem. 02.

This course deals with the selection and laying out of a poultry farm; the making of poultry appliances such as trap nests, mash hoppers, fattening crates, catching coops, etc.; poultry house construction; anatomy and physiology; caponizing; disease; parasites and sanitation; killing, picking, and dressing fowls for market; marketing; the general care and management of a poultry farm.

P. H. 03. **Fancy Judging.** First semester. 1½ units.

Two laboratories.

Prerequisite: P. H. 02; not given if selected by less than six students. Full senior standing required.

Judging the principal breeds of poultry for fancy and utility points both by the score card and comparison methods; fitting fowls for exhibition.

P. H. 04. **Incubation, Brooding, and Pen Practice.** Second semester. 5 units.

Hours to be arranged. Morning, noon, and night work every day, including Sunday if necessary.

Prerequisite: P. H. 01. Preceded or accompanied by P. H. 02.

A practice course in operating incubators, keeping records, hatching eggs, brooding chicks, caring for pens of mature fowls.

SOILS

Professor Shaw, Assistant Professor Smith, Mr. Dean

†So. 01. **Soils.** First semester. 3 units.

Two lectures; one 4-hour laboratory.

Prerequisite: Chem. 01 and 02. Prerequisite to Agr. 02. Required for graduation.

This course treats of the origin and formation of soils; their relation to heat, moisture, and air; plant food constituents and alkali; the effect of drainage, irrigation, mulches, fertilizers, crop rotations, and the renovating of worn-out soils.

VETERINARY SCIENCE

Dr. Haring, Dr. Hayes

V. S. 01. **Veterinary Science.** First semester. 3 units.

Two lectures; two laboratories.

Prerequisites: A. H. 01 and 02. Senior standing.

This course includes the essentials of anatomy, physiology, and diseases of farm animals; the prevention, recognition, and control of common diseases, together with the study of minor surgery necessary to the ranch.

VITICULTURE

Professor Bioletti, Mr. Flossfeder

Vit. 01. **Vineyard Organization.** First semester. 3 units.

Two lectures; two laboratories.

Raisin making; classification and structure of the vine; pruning and training of vines; location, laying out, and planting of vineyards; visits to leading vineyards.

Vit. 02. **Vineyard Practice.** Second semester. 5 units.

Two lectures; two laboratories.

Prerequisite: Vit. 01.

Propagation of vines, bench grafting, callusing, nursery work; resistant vines, diseases of the vine and methods of control; insect pests and methods of control; making grape juice and vinegar; trips in the field.

You should know

that the College of Agriculture has an Extension Division. Its work is to carry the best results of the investigational efforts of the institution to the public at large. The Agricultural Extension Division accomplishes these ends by:

FARMERS' INSTITUTES
AGRICULTURAL BETTERMENT CLUBS
EXTENSION SCHOOLS
PERSONAL VISITATION
CORRESPONDENCE
COUNTY FARM ADVISERS
BOYS' AGRICULTURAL CLUBS

FOR FURTHER INFORMATION ADDRESS

AGRICULTURAL EXTENSION DIVISION
COLLEGE OF AGRICULTURE
BERKELEY, CALIFORNIA

UNIVERSITY OF CALIFORNIA BULLETIN

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OF THE UNIVERSITY OF CALIFORNIA

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- The Circular of Information, Academic Departments.
- The Annual Announcement of the Summer Session.
- The Annual Announcements of the Medical School, the Colleges of Dentistry, Law, and Pharmacy.
- The President's Annual Report.
- The Prospectus of the College of Agriculture.

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1919/20

PROSPECTUS
OF THE
COLLEGE OF AGRICULTURE
1919-1920

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UNIVERSITY OF CALIFORNIA BULLETIN
THIRD SERIES XII Nº 10
APRIL 1919

Administrative Bulletins of the University of California

1919-20. No. 10

ORGANIZATION OF THE UNIVERSITY

The University of California is an integral part of the public educational system of the State. As such it completes the work begun in the public schools. Through aid from the State and the United States, and by private gifts, it furnishes instruction in literature and in science, and in the professions of engineering, art, law, medicine, dentistry, and pharmacy. In the Colleges of Letters and Science, Commerce, Agriculture, and Engineering these privileges are offered without charge for tuition, to all residents of California who are qualified for admission. Non-residents of California are charged a tuition fee of ten dollars each half-year. In the professional colleges, except that of Law, tuition fees are charged. The instruction in all the colleges is open to all qualified persons, without distinction of sex. The Constitution of the State provides for the perpetuation of the University, with all its departments.

Letters of inquiry concerning the College of Agriculture should be addressed to the *Dean of the College of Agriculture, Berkeley, California.*

For the following circulars of information concerning the several colleges and departments of the University apply to the *Recorder of the Faculties, University of California, Berkeley, California.*

1. The Circular of Information, Academic Departments (College of Letters and Science and Engineering, and the first two years of Medicine). Containing general information about the University, its organization, government, faculties, requirements for admission both to graduate and undergraduate status, requirements for degrees and teachers' recommendations, expenses.

2. The Annual Announcement of Courses of Instruction in the Academic Colleges. Published annually in July. Price 10 cents. Sent by mail by the Recorder of the Faculties for 15 cents.

3. The Announcement of the Summer Session in the Academic Colleges, published annually in March. Sent free.

UNIVERSITY OF CALIFORNIA

PROSPECTUS

OF THE

COLLEGE OF AGRICULTURE

1919-1920

PUBLISHED BY THE
UNIVERSITY OF CALIFORNIA
BERKELEY

AGRICULTURAL STAFF

Benjamin Ide Wheeler, Ph.D., LL.D., President of the University of California.

Thomas Forsyth Hunt, D.Agr., D.Sci., Dean of the College of Agriculture; Professor of Agriculture; Director of the Agricultural Experiment Station.

Frank Adams, M.A., Professor of Irrigation Investigations.

R. L. Adams, M.S., Associate Professor of Agronomy.

John W. Adriance, B.S., Assistant in Agricultural Extension.

E. O. Amundsen, B.S., Instructor in Agricultural Extension.

H. J. Baade, B.S., Instructor in Agricultural Extension.

E. B. Babcock, M.S., Professor of Genetics.

H. S. Baird, B.S., Assistant Professor in Dairy Industry, Davis.

G. Barovetto, Field Assistant in Viticulture, Davis.

J. T. Barrett, Ph.D., Professor of Plant Pathology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.

L. D. Batchelor, Ph.D., Professor of Plant Breeding in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.

W. E. Bates, M.D., Lecturer in Hygiene, Davis.

J. R. Beach, D.V.M., Instructor in Veterinary Science, Davis.

S. H. Beckett, B.S., Associate Professor of Irrigation Practice, Davis.

H. L. Belton, Instructor in Shopwork, Davis.

E. W. Berg, B.S., Assistant in Agricultural Extension.

F. T. Bioletti, M.S., Professor of Viticulture and Enology.

Miss Agnes E. Brown, A.B., Librarian, Davis.

S. M. Brown, Assistant Chemist in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.

[3]Donald Bruce, M.F., Assistant Professor of Forestry.

V. C. Bryant, M.S., Assistant Professor in Agricultural Extension.

Mrs. D. L. Bunnell, Librarian.

J. S. Burd, B.S., Professor of Agricultural Chemistry.

R. E. Burton, B.S., Assistant in Agricultural Extension.

H. M. Butterfield, M.S., Instructor in Agricultural Education.

D. H. Carey, B.S., Instructor in Floriculture and Superintendent of Greenhouses and Gardens.

C. V. Castle, B.S., Assistant in Animal Husbandry.

A. W. Christie, M.S., Instructor in Agricultural Chemistry.

Miss Lillian D. Clark, Instructor in Agricultural Extension.

W. T. Clarke, B.S., Professor of Agricultural Extension and Superintendent of Farmers' Institutes.

R. E. Clausen, Ph.D., Assistant Professor of Genetics.

J. E. Coit, Ph.D., Professor of Citriculture.

G. A. Coleman, M.A., Instructor in Entomology and Curator of the Agricultural Museum.

J. L. Collins, B.S., Instructor in Genetics.

E. L. Conant, Assistant in Agricultural Extension.

I. J. Condit, B.S., Assistant Professor of Citriculture.

C. M. Conner, B.S., Instructor in Agricultural Extension.

B. H. Crocheron, M.S.A., Associate Professor of Agricultural Extension.

W. V. Cruess, B.S., Assistant Professor of Zymology.

E. W. Curtiss, B.S., Assistant in Agricultural Extension.

J. B. Davidson, M.E., Professor of Agricultural Engineering, Davis.

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[3]In Military Service. *Resigned.

R. N. DAVIS, B.S., Assistant in Agricultural Extension.
W. C. DEAN, B.S., Instructor in Soil Technology.
S. L. DENNING, B.S., Instructor in Dairy Husbandry, Davis.
J. A. DENNY, Foreman in Cereal Work, Fresno.
E. R. DE ONG, B.S., Instructor in Entomology, Davis.
MISS RUTH DICKEY, Assistant in Agricultural Extension.
E. M. DOBBS, D.V.M., Assistant in Agricultural Extension.
W. H. DORE, B.S., Assistant Chemist in Fertilizer Control.
J. E. DOUGHERTY, B.S., Associate Professor of Poultry Husbandry, Davis.
[3]P. I. DOUGHERTY, B.S., Assistant in Agricultural Extension.
H. E. DROBISH, B.S., Assistant in Agricultural Extension.
MISS HARRIET G. EDDY, A.B., Assistant Professor of Agricultural Extension; State Home Demonstration Leader.
C. F. ELWOOD, B.S., Assistant Professor of Agricultural Extension.
E. O. ESSIG, M.S., Assistant Professor of Entomology.
H. S. FAWCETT, M.S., Professor of Plant Pathology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
L. J. FLETCHER, B.S., Instructor in Agricultural Engineering, Davis.
F. C. H. FLOSSFEDER, Assistant Professor of Viticulture and Superintendent of Grounds at Davis.
MISS LILLIAS D. FRANCIS, Instructor in Agricultural Extension.
[3]S. B. FREEBORN, B.S., Assistant Professor of Entomology.
H. B. FROST, Ph.D., Instructor in Plant Breeding in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
E. L. GARTHWAITE, B.S., Assistant in Agricultural Extension.
W. F. GERICKE, M.S., Assistant Professor of Soil Chemistry.
J. W. GILMORE, M.S.A., Professor of Agronomy.
MRS. MARY F. GINN, Assistant in Agricultural Extension.
G. E. GORDON, B.S., Assistant in Agricultural Extension.
W. A. GRAHAM, B.S., Assistant in Agricultural Extension.
H. I. GRASER, B.S., Assistant in Agricultural Extension.
J. F. GRASS, JR., B.S., Assistant in Agricultural Extension.
G. P. GRAY, M.S., Assistant Professor in Insecticides and Chemist in Insecticide Laboratory.
J. W. GREGG, B.S., Professor of Landscape Gardening and Floriculture.
F. L. GRIFFIN, M.S., Associate Professor of Agricultural Education.
R. M. HAGEN, B.S., Instructor in Agricultural Extension.
F. F. HALMA, Assistant in Plant Physiology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
C. M. HARING, D.V.M., Professor of Veterinary Science.
WILLIAM HARRISON, Assistant in Agricultural Extension.
G. H. HART, D.V.M., Associate Professor of Veterinary Science.
[3]L. D. HASELTINE, B.S., Assistant in Agricultural Extension.
E. J. HAUSER, B.S., Assistant in Agricultural Extension.
F. M. HAYES, D.V.M., Assistant Professor of Veterinary Science.
MRS. JESSICA HAZZARD, Assistant in Agricultural Extension.
W. H. HEILEMANN, M.S., Assistant Professor of Agricultural Extension.
A. H. HENDRICKSON, B.S., Assistant Professor of Pomology, Davis.
G. W. HENDRY, B.S., Assistant Professor of Agronomy, Davis.
W. B. HERMS, M.A., Associate Professor of Parasitology.
J. P. HERTEL, B.S., Assistant in Agricultural Extension.
P. L. HIBBARD, B.S., Assistant Professor of Agricultural Chemistry.
MISS C. J. HILL, B.L., Assistant in Dairy Testing.
D. R. HOAGLAND, M.S., Assistant Professor of Agricultural Chemistry.

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[3] In Military Service.

R. W. Hodgson, M.S., Instructor in Citriculture.
W. T. Horne, B.S., Associate Professor of Plant Pathology.
W. L. Howard, Ph.D., Professor of Pomology, Davis.
W. G. Hummel, M.S., Professor of Agricultural Education.
Thomas Francis Hunt, B.S., Assistant Professor of Agricultural Extension; Assistant Superintendent Farmers' Institutes.
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J. Jacobson, Foreman of Repairs, Davis.
M. E. Jaffa, M.S., Professor of Nutrition.
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W. O. Johnson, M.A., M.D., Assistant in Agricultural Extension, El Centro.
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A. A. Jungermann, M.S., Assistant in Agricultural Extension.
Miss Beatrice Kelley, Assistant in Agricultural Extension.
T. R. Kelley, A.B., Instructor in English and History, Davis.
W. P. Kelley, Ph.D., Professor of Agricultural Chemistry in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
P. B. Kennedy, Ph.D., Associate Professor of Agronomy.
W. A. Kent, Assistant in Agricultural Extension.
O. J. Kern, Assistant Professor of Agricultural Education.
Hugh Knight, Assistant in Entomology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
G. W. Kretsinger, B.S., Assistant in Agricultural Extension.
Miss Marjorie E. Landers, Assistant in Agricultural Extension.
E. J. Lea, M.S., Associate Professor of Nutrition.
M. A. W. Lee, B.S., Assistant in Agricultural Extension.
C. B. Lipman, Ph.D., Professor of Soil Chemistry and Bacteriology.
W. E. Lloyd, B.S., Assistant Professor of Poultry Husbandry, Davis.
Roy D. McCallum, B.S., Assistant in Agricultural Extension.
W. A. McCutchan, B.S., Assistant in Agricultural Extension.
W. W. Mackie, M.S., Assistant Professor of Agronomy.
B. A. Madson, B.S.A., Assistant Professor of Agronomy, Davis.
J. C. Marquart, B.S., Assistant in Dairy Husbandry.
D. E. Martin, B.S., Assistant in Agricultural Extension.
J. C. Martin, B.S., Assistant in Agricultural Chemistry.
D. T. Mason, M.S., M.F., Professor of Forestry.
[3]H. A. Mattill, Ph.D., Assistant Professor of Nutrition.
Mrs. Helen I. Mattill, Ph.D., Instructor in Nutrition.
T. C. Mayhew, B.S., Instructor in Agricultural Extension.
Elwood Mead, D.E., Professor of Rural Institutions.
G. E. Merrill, B.S.A., Instructor in Agricultural Extension.
Woodbridge Metcalf, M.S., Assistant Professor of Forestry.
J. W. Mills, Instructor in Agricultural Extension.
Miss Myrtle Millward, B.S., Assistant in Agricultural Extension.
Miss Blythe F. Monroe, B.S., Assistant in Soil Technology.
J. N. Moore, Foreman, Forestry Station, Chico.
Joe G. Moodey, B.S., Assistant to the Director; Assistant Professor of Agriculture.
*Mrs. Della J. Morris, B.D.S., Assistant in Agricultural Extension.
Walter Mulford, F.E., Professor of Forestry.
C. S. Myszka, B.S., Instructor in Agricultural Extension.
A. N. Nathan, B.S., Assistant in Agricultural Extension.
R. E. Nebelung, B.S., Assistant in Agricultural Extension.

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[3] In Military Service. *Resigned.

J. W. Nelson, Assistant Professor of Soil Technology.
Carl Nichols, M.S., Instructor in Agricultural Extension.
J. H. Norton, Instructor in Chemistry, Davis.
Warren D. Norton, B.S., Assistant in Agricultural Extension.
E. L. Overholser, Assistant Professor of Pomology.
W. E. Packard, M.S., Assistant Professor of Agricultural Extension.
P. T. Peterson, D.V.M., Instructor in Veterinary Science, in charge of Serum Manufacture.
Guy L. Philp, B.S., Instructor in Pomology, Davis.
Willis T. Pope, M.S., Instructor in Botany, Davis.
J. A. Prizer, B.S., Superintendent of Cultivations in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
H. J. Quayle, M.S., Professor of Entomology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
W. R. Ralston, B.S., Assistant in Agricultural Extension.
H. S. Reed, Ph.D., Professor of Plant Physiology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
M. A. Rice, B.S., Assistant in Agricultural Extension.
C. L. Roadhouse, D.V.M., Professor of Dairy Industry, Davis.
†R D. Robertson, B.S., Instructor in Agricultural Extension.
J. T. Rogers, Farm Foreman, Davis.
S. S. Rogers, B.S., Associate Professor of Olericulture, Davis.
C. W. Rubel, B.S., Assistant Professor of Agricultural Extension.
F. H. Scribner, A.B., Assistant in Agricultural Extension.
N. P. Searles, B.S., Instructor in Agricultural Extension.
[3]C. M. Seibert, B.S., Assistant in Agricultural Extension.
H. H. Severin, Ph.D., Instructor in Entomology.
B. W. Shaper, Instructor in Agricultural Extension.
L. T. Sharp, B.S., Assistant Professor of Soil Chemistry and Bacteriology.
C. F. Shaw, B.S., Professor of Soil Technology.
H. W. Shepherd, B.S., Instructor in Agricultural Education.
Alfred Smith, M.A., Assistant Professor of Soil Technology.
Miss Fleda E. Smith, B.S., Assistant in Agricultural Extension.
[3]W. A. Stabler, B.S., Assistant in Veterinary Science.
C. O. Smith, M.S., Instructor in Plant Pathology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
Miss E. H. Smith, M.S., Assistant Professor of Plant Pathology.
L. B. Smith, B.S., Instructor in Agricultural Extension.
R. E. Smith, B.S., Professor of Plant Pathology.
E. F. Smyth, Assistant in Agricultural Extension.
R. T. Stevens, B.S., Assistant Professor of Landscape Gardening.
G. R. Stewart, B.S., Assistant Professor of Agricultural Chemistry.
E. C. Sullivan, B.S., Assistant in Agricultural Extension.
Wallace Sullivan, Assistant in Agricultural Extension.
[3]A. F. Swain, M.S., Assistant in Entomology in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
W. L. Sweet, M.S., Instructor in Pomology.
Parker Talbot, B.S., Assistant in Agricultural Extension.
T. F. Tavernetti, B.S., Assistant Professor of Farm Practice and Assistant to Dean of the University Farm School, Davis.
R. H. Taylor, B.S., Assistant Professor of Pomology.
E. E. Thomas, B.S., Assistant Chemist in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.

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[3] In Military Service. †Died January 6, 1919.

J. I. Thompson, B.S., Assistant Professor of Animal Husbandry, Davis.
F. G. Tiffany, B.S., Assistant in Agricultural Extension.
J. E. Tippett, B.S., Assistant in Agricultural Extension.
C. M. Titus, M.A., Instructor in Mathematics, Davis.
J. Traum, D.V.M., Assistant Professor of Veterinary Science.
Miss Minnie A. Tribby, Assistant in Agricultural Extension.
G. H. True, B.S., Professor of Animal Husbandry, Davis.
W. P. Tufts, M.S., Assistant Professor of Pomology, Davis.
R. S. Vaile, B.A., Assistant Professor of Orchard Management in Citrus Experiment Station and Graduate School of Tropical Agriculture, Riverside.
E. C. Van Dyke, M.D., Assistant Professor of Entomology.
H. E. Van Norman, B.S., Dean of the University Farm School, Davis; Vice-Director of Agricultural Experiment Station; Professor of Dairy Management.
F. J. Veihmeyer, B.S., Assistant Professor of Irrigation Investigations.
E. C. Voorhies, B.S., Assistant Professor of Animal Husbandry, Davis.
[3]H. A. Wadsworth, B.S., Assistant in Irrigation, Davis.
H. E. Wahlberg, B.S., Assistant in Agricultural Extension.
[3]R. M. Walker, B.S., Assistant in Agricultural Extension.
H. L. Washburn, B.S., Assistant in Agricultural Extension.
W. G. Waterhouse, B.S., Assistant in Agricultural Extension.
A. E. Way, Field Assistant in Viticulture, Fresno.
D. D. Waynick, Ph.D., Instructor in Soil Chemistry.
H. J. Webber, Ph.D., Director Citrus Experiment Station; Dean of the Graduate School of Tropical Agriculture; Professor of Plant Breeding, Riverside.
Mrs. Alma A. Weigart, M.A., Assistant in Agricultural Extension.
H. A. Weinland, B.S., Instructor in Agricultural Extension.
W. W. Weir, Assistant Professor of Soil Technology.
J. C. Whitten, Ph.D., Professor of Pomology.
E. J. Wickson, M.A., Professor of Horticulture (Emeritus).
W. S. Wilkinson, B.S., Assistant in Agronomy, Imperial Valley.
C. J. Williams, B.S., Assistant in Agricultural Extension.
R. N. Wilson, Instructor in Agricultural Extension.
F. W. Woll, Ph.D., Professor of Animal Nutrition, Davis.
[3]Frank Wood, B.S., Assistant in Agricultural Extension.
M. N. Wood, B.S., Assistant in Pomology, Davis.
C. W. Woodworth, M.S., Professor of Entomology.
Mrs. M. H. Woodworth, Assistant in Agricultural Extension.

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[3] In Military Service

ACTIVITIES

The College of Agriculture has three phases: research, education, and public welfare. It meets these responsibilities through more or less definitely organized activities, as follows:

1. *University instruction* to students who are candidates for the degree of Bachelor of Science in the College of Agriculture. The largest possible freedom of election is permitted during the junior and senior years. For admission see page 16.

2. *University Farm School instruction* to students who have reached the age of 18 years. Applicants under 18 years of age may be admitted if they are graduates of a high school of recognized standing. Applicants who are not high school graduates are required to pass entrance examinations in English Composition and arithmetic. For information concerning courses of study see page 64.

3. *Short courses for practical farmers.* These are given at the University Farm during October and November. For further information send for Announcement of Farmers' Short Courses.

4. *Correspondence Courses in Agriculture.* For circular concerning the twenty-seven courses of study and for application blanks address College of Agriculture, University of California, Berkeley.

5. *University extension in agriculture,* including County Farm Bureaus and Boys' Agricultural Clubs. Applications for farmers' institutes should be addressed to the Professor of Agricultural Extension, University of California, Berkeley.

6. *Research.* Certain funds received from the Federal government can be used only for experimental work. State funds are also used for this work. Results of these investigations are published in bulletins, which will be sent free upon request.

7. *Graduate work.* Opportunities of an unusual character are offered by reason of the large number of research laboratories. A special department of graduate work in tropical agriculture has been organized. The Announcement of the Graduate School will be sent free to university and college graduates.

UNIVERSITY INSTRUCTION

Students entering the courses in agriculture leading to the degree of Bachelor of Science are required before their junior year to complete Agricultural Chemistry, Soils, Plant Propagation and Genetics, together with the sciences underlying these courses, as Chemistry, Botany, Bacteriology, Zoology and Geology. They are also required before graduation to complete certain courses in English, mathematics, history or economics, mechanical drawing, and surveying, and to complete a Summer Practice Course as arranged by the division in which they take their major subject. During the junior and senior years they are required to pursue courses in one or more of the following fields of study: Agricultural Chemistry, Agricultural Education, Agricultural Engineering, Agronomy, Animal Husbandry, Citriculture, Dairy Industry, Entomology, Forestry, Genetics, Irrigation, Landscape Gardening and Floriculture, Nutrition, Parasitology, Plant Pathology, Pomology, Poultry Husbandry,

The University Library

Rural Institutions, Soils, Veterinary Science, and Viticulture and Enology. The student is free to elect at least one-third of his studies during his junior and senior years from any of the courses offered in the University into which he is qualified by previous preparation to enter.

The freshman and sophomore years must be spent at the University in Berkeley, but one semester of the junior and senior year may be taken at the University Farm at Davis or elsewhere. Only students who have been graduated from an accredited high school or its equivalent can enter these courses. Prospective students are advised to consult with their high school principal concerning the requirements for entrance and to apply to the Recorder of the Faculties, University of California, Berkeley, for proper blanks for submitting the record of their high school work.

Class in Surveying at the University Farm.

It is the aim, first, so to educate students who spend four years or more in the College of Agriculture as to make them vital forces in the progress of their respective communities; second, to train leaders in the dissemination of agricultural knowledge, and competent investigators. The University courses in Agriculture give the mental, scientific, and technical training requisite for efficient work in practical farming, its allied industries, agricultural education, and research.

FARM SCHOOL INSTRUCTION

The University Farm School offers a three years' course in Agriculture, so arranged that the student may devote more attention to animal husbandry, dairy manufacture, horticulture, or poultry husbandry than to other subjects which supplement them.

The course is planned to admit the student who is eighteen years of age and cannot meet the requirements for admission to the four years' course in agriculture in the University or, though able to meet them, does not care for the thorough training in mathematics and sciences required for the B.S. degree.

The aim is to familiarize the student with the most efficient agricultural practice, to present the principles underlying it and the part chemistry, botany, entomology, mathematics, and other sciences play as aids in every-day farming.

A large portion of the work is done in laboratory, field, shop, and stable, though no student can secure the benefit of accumulated knowledge of science and practice without earnest devotion to textbooks, state and government publications and lecture notes. The student unwilling or unable to apply himself to study as well as to the manual arts of agriculture will make little progress.

Vocal and orchestral music are encouraged and farm practice is required of those inexperienced in the elementary manual work of the farm.

The graduate of a high school accredited to the University of California will be admitted without examination and given credit for one year (*i. e.*, 40 units) and excused from such subjects as he may have had the equivalent of, usually English, mathematics, and chemistry. As a rule, these will enable him to complete the required work for a certificate in two years. About one-half the students are high school graduates, while many others have had more or less high school work.

High school students are urged to complete their course in high school if possible, thereby obtaining the opportunity for admission to college offering degree courses.

The University Farm School course is not preparatory to the University of California and credit is not given by the University for Farm School subjects except that University Farm School students registered in the University may secure credit for University Farm School subjects by passing the University examination in them.

''Prospective students may consult high school principals and county superintendents of schools concerning the courses of study.

''The average age of entrants to the University Farm is a little over twenty years.''

Entrance examinations for non-graduates of high schools are usually held by county superintendents of schools each May or June and are held at the Farm the Friday before each semester opens. Consult the county superintendent as to date of examination. By passing this early examination the student may know that he will be admitted. Applications for admission should be sent to the Dean of the University Farm School, Davis, California, so as to reach him, if possible, before September 1.

THE FARMERS' SHORT COURSES

An Act of the Legislature of 1905 provided for the purchase of a farm for the University of California, to be known as the University Farm and to be used by the College of Agriculture for purposes of experimentation and instruction in agriculture. In addition to other details, the Act provided that ''short courses of instruction shall also be arranged for in each of the leading branches of agricultural industry, so regulated as to provide for popular attendance and general instruction in agricultural practice.''

Conforming to this Act, and with funds appropriated by each succeeding Legislature, short courses have been given annually, beginning in the fall of 1908. The attendance and the expression of hearty appreciation of the courses have been gratifying to the University and have indicated that the plans adopted meet with general approval.

Four Farmers' Short Courses of six weeks each, beginning the last week of September, are given as follows: General Agriculture, Dairy Manufactures, Horticulture, and Poultry Husbandry. Immediately preceding these courses a two weeks' course in Gas Tractor Engineering will be given, and immediately following the Six Weeks' Courses, three courses of one or two weeks each will be given as follows: Butter Making, Cheese Making, and Beekeeping. The six-week courses and the Gas Tractor Course are open without examination to any person eighteen years of age or over, but only persons who submit evidence of previous satisfactory practical experience are permitted to take the two-week courses in butter and cheese making. For the Announcement of Farmers' Short Courses, giving complete programme of lectures and practical exercises, address Dean of University Farm School, Davis, California.

CORRESPONDENCE COURSES IN AGRICULTURE

Among those who will find these courses fitted to their needs are: busy farmers and their wives who wish to know more of the business of managing the farm and how to make the home surroundings attractive; persons interested in some special agricultural enterprise who wish to make a careful study of it; boys and girls on the farm who cannot attend an agricultural school or college; professional men, business men, mechanics, and others who wish to broaden their agricultural information or to gain information which will enable them to take up some special line of farming; and teachers of agriculture in rural and other public schools.

Each course deals with a special type of farming or a special topic of farm interest—as dairy husbandry, alfalfa culture, walnut culture, and canning and preserving—with the purpose of giving in concise form the information needed by a person engaging in that particular kind of work. They are prepared with special reference to agricultural conditions in California and to the farming methods that apply in the various sections of the state.

At present twenty-seven courses are offered; others are being prepared and will be announced when ready for distribution. Those courses now available are: Alfalfa Culture, Corn Culture, Onion Culture, Barley Culture, Dairy Husbandry, Swine Husbandry, Sheep Husbandry, Poultry Husbandry, Bee Keeping, Pear Culture, Plum and Prune Culture, Walnut Culture, Almond Culture, Grape Growing, Citrus Fruits, Olive Growing, Fig Culture, Home Floriculture, Canning and Preserving, Date Culture, Certain Semi-Tropical Fruits, Vegetable Gardening, Adult and Child Nutrition, Lumber and Its Uses, The Business Aspects of California Agriculture (for the beginner), Avocado Culture, Milch Goat Raising.

How to Enroll.—Send to the College of Agriculture, Berkeley, California, for an application card and Circular 113, which lists and describes the agricultural correspondence courses now being offered and those that are in course of preparation. After deciding which course to take first, the application card should be filled out and returned. The first two lessons of the course will then be sent, with questions on each lesson and instructions for proceeding with the work.

COLLEGE OF AGRICULTURE

Every student in the College of Agriculture should read carefully the following requirements for graduation and arrange his schedule of studies to meet them. The approval of a schedule by an officer of the college does not relieve the student from the responsibility of meeting these requirements.

ADMISSION

Graduates of accredited secondary schools of California will, upon recommendation of the principal, be admitted to the College of Agriculture without examination.

Work in the College of Agriculture will be facilitated if the student has completed while in the high school the following:

English	4 years
Mathematics, including trigonometry	4 years
Physics	1 year
Chemistry	1 year
History	1 year
Geometrical drawing	1 year

A reading knowledge of a foreign language will be found useful, particularly to those students who major in agricultural chemistry, plant pathology or soils.

THE COURSES OF STUDY

The requirements for the degree of Bachelor of Science in the College of Agriculture are *four years of residence* and *130 units of study*. Ordinarily 64 units will be completed during the freshman and sophomore years, 6 units during the six weeks' summer practice course, and 60 units during the junior and senior years.

FRESHMAN AND SOPHOMORE YEARS

During the Freshman and Sophomore years the following order of subjects will be required, but for those who upon entrance to the University have definitely decided upon their major study this programme may be varied with the approval of the head of the division in which such major subject is to be taken.

EXAMPLE OF PROGRAMME

FRESHMAN YEAR

First Half-year

Bot. 2. General Botany	3
Chem. 1A. Inorganic and Qualitative Analysis	5
Hyg. 1. General Hygiene	2
†Math. C. Trigonometry	3
Mil. 1A. Military Drill	½
Mil. 1B. Tactics	1
Phys. Ed. 1A. Gymnasium	½
Optional	3
	18

Second Half-year

Bot. 3. General Botany	3
Chem. 1B. Inorganic and Qualitative Analysis	5
†Drawing CD. Mechanical	2
Mil. 2A. Military Drill	½
Mil. 2B. Tactics	1
Phys. Ed. 1B. Gymnasium	½
Path. 1. Bacteriology	4
Optional	2
	18

SOPHOMORE YEAR

First Half-year

Agr. Chem. 1 and 2. Chemistry of Agriculture	5
*C. E. 1E. Surveying Theory and Field Work	3
Geol. 1A. General Geology	3
Mil. 1A. Military Drill	½
Mil. 1B. Theory	1
Phys. Ed. 1C. Gymnasium	½
Zool. 1A. General Zoology	4
*Optional	2 or 5
	19

Second Half-year

*C. E. 1E. Surveying Theory and Field Work	3
Gen. 1. Principles of Breeding Plants and Animals	4
Land. Gard. 1. Plant Propagation	4
Mil. 2A. Military Drill	½
Mil. 2B. Theory	1
Phys. Ed. 1D. Gymnasium	½
Soils 1. Origin, Formation, Classification and Management	4
*Optional	2 or 5
	19

(1) Including matriculation units, all students must complete as soon as possible, and before graduation, English, 12 units, and pass an examination in Subject A; mathematics, including trigonometry, 12 units; physics, 3 units; history or economics, 9 units. Students in the College of Agriculture without credit for matriculation physics may take the equivalent course in the summer session or they may take Physics 2A in the first semester, provided they have credit in trigonometry or are taking it concurrently. If the student has entered with a minimum of six units of English, mathematics, and three units of history, he must complete in the University six units each of English, mathematics, and

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* C. E. 1E may be taken either half-year, hence optional units vary, depending on half-year this subject is taken. Students whose major is Forestry must take C. E. 1A–1B instead of 1E.

† Students with matriculation credit in these subjects need not register for them.

economics.* These subjects he will ordinarily take during his freshman and sophomore years. Improper selection of high school and lower division courses may prevent graduation in four years; for example, where students enter without either physics or chemistry.

(2) Summer courses in special work connected with proposed major subject must be taken before beginning or immediately following the junior year as arranged by the division in which the major work is taken. This course is six weeks in length. Work is carried on as far as possible just as in actual practice; 6 units credit. The courses usually begin immediately following Commencement. Prerequisite: completion of two years of study in a university or college course in agriculture. Women may offer in lieu of the summer practice six units of approved work in the summer session.

During the Summer Session of 1920 the prescribed sophomore courses in Soil Technology and Genetics will, if necessary, be given. These courses will be open only to students registered in the regular four-year courses in Agriculture, who have been absent from the University in the military or naval services of the nation, and who, because of the lack of these courses, would be delayed a half year or more in securing their degree.

(3) Courses of instruction should be chosen primarily with reference to the major subjects. For a clear understanding of what studies the major subjects include the student should consult the courses of study outlined for the various major subjects in the PROSPECTUS OF THE COLLEGE OF AGRICULTURE and in the ANNOUNCEMENT OF COURSES. The major subjects in agriculture and their respective specific requirements are as follows:

I.	Agricultural Chemistry.	Chemistry 6A–6B.
II.	Agricultural Education.	Botany 116 and Economics 1A or 126.
III.	Agronomy.	Botany 116 and Economics 1A or 126.
IV.	Animal Husbandry.	Physiology 1.
V.	Citriculture	Botany 116 and Economics 1A or 126.
VI.	Dairy Industry.	Physiology 1 or Chemistry 5.
VII.	Entomology.	Entomology 1, 2, and 3.
VIII.	Forestry.	C.E. 1A, 1B; Botany 104A; six units of economics.
IX.	Irrigation.	Physics 2A; Math. 1A, 1B; and C.E. 1A, 1B, 1C, 1D, 3A.
X.	Landscape Gardening and Floriculture	(*a*) Botany 104A, 104B; Drawing CD; Graphic Art A, B; (*b*) Economics 1A or 126; Botany 104A, 104B.
XI.	Nutrition.	Chemistry 5.
XII.	Parasitology.	Physiology 1; Hygiene 3; Entomology 1, 4, and 5.
XIII.	Plant Pathology.	Botany 105A.
XIV.	Pomology.	Botany 116 and Economics 1A or 126.
XV.	Poultry Husbandry.	Physiology 1.
XVI.	Soils.	Chemistry 5.
XVII.	Viticulture and Enology.	(*a*) Botany 116 and Economics 1A or 126; (*b*) Chemistry 5.

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* Three units may be in history.

(4) All students before graduation must complete the following:

Bacteriology 1, one half-year.
Botany 2 and 3, two half-years.
Chemistry 1A, 1B, two half-years.
Civil Engineering, 1E, one half-year.
*Drawing CD, one half-year.
Geology 1A, one half-year.
*Mathematics C, one half-year.
Zoology 1A, one half-year.
Agricultural Chemistry 1 and 2, one half-year.
Genetics 1, one half-year.
Plant Propagation 1, one half-year.
Soil Technology 1, one half-year.

JUNIOR AND SENIOR YEARS

Among the sixty units of work normally taken in the junior and senior years there must be thirty-six units in *major courses* which, except when varied with the consent of the head of the division in which the major subject is taken, will be divided as follows:

Major subject	10
Thesis in the major subject	4
Courses correlated with major subject	10
Agriculture (any sub-departments)	12

The work must be carried on under the direction of the head of the division in which the major subject is taken, and all junior and senior study-lists must be approved by him before presentation for signature by the Dean or Secretary.

The Department of Agriculture is authorized to adjust study-cards of junior and senior students in the College of Agriculture, when the total number of hours per week exceeds the regular maximum (16 units), by reason of the policy of the department in eliminating courses below a three-unit value.

Thesis work will be arranged with an instructor in the major subject. The student will submit his plan of thesis work to the dean of the college at the beginning of the senior year, and upon approval by the dean shall file his thesis card with the secretary of the department. For further procedure follow the rules governing theses as stated in the Circular of Information. One hundred and thirty units and four years of residence are required for graduation.

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* Students with matriculation credit in these subjects are not required to complete these courses.

AGRICULTURAL CHEMISTRY

Chemistry offers the only available methods for the more precise measurement and proper study of many of the most important phenomena observed in agriculture. In this lies the justification for courses in chemistry dealing with agricultural materials. These substances are so sensitive to their surroundings, their natural environment is of such a complex character and so difficult to control in practice, that Agriculture and Chemistry cannot be adequately considered independently. The courses in Agricultural Chemistry are designed to familiarize the student with materials and methods of manipulation and to give facility in intepreting his results and in the practical utilization of the data obtained. These courses are co-ordinated with work in organic chemistry, biological chemistry, food analysis, and soil chemistry. Training of this type offers preparation for the career of teacher, investigator, or professional agricultural chemist, in all of which there is abundant opportunity.

COURSE OF STUDY

Summer practice course, Agricultural Chemistry 99, must precede the junior year.

Required for major subject: Chemistry 6A and 6B, preferably taken in sophomore year.

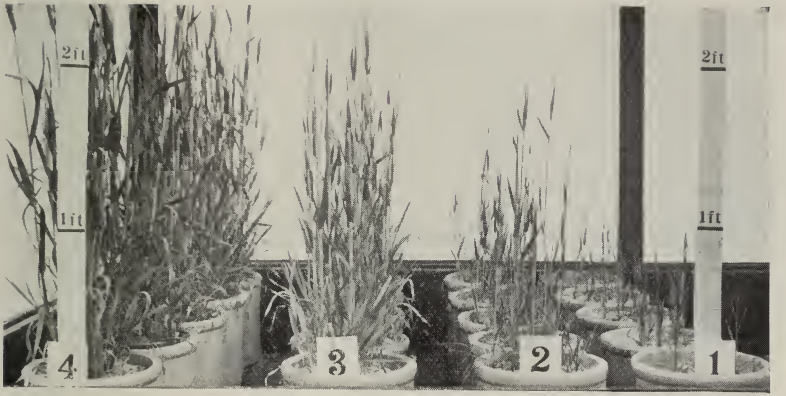
EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Agr. Chem. 101A. Adv. Agr. Chem.	3	Agr. Chem. 101B. Adv. Agr. Chem.	3
Agr. Chem. 104. Seminar	1	Agr. Chem. 102. Fertilizers	2
Bot. 116. Economic Botany	3	Agr. Chem. 104. Seminar	1
Chem. 8A. Organic Chemistry	2	Chem. 8B. Organic Chemistry	2
Chem. 9. Organic Chemistry	3	C. E. 109B. Sewage Disposal	1
C. E. 111B. Water Supplies	1	Nutr. 119. Food Chemistry	3
Pom. 120. General Pomology	3	Soils 101. Soils of the U. S.	3
	16		15

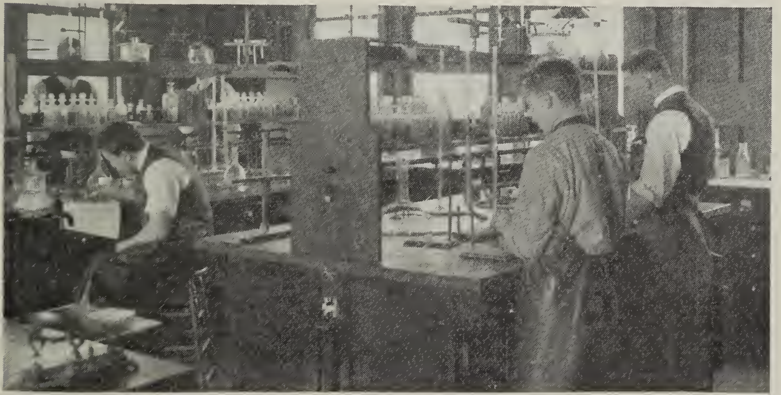
SENIOR

First Half-year		*Second Half-year*	
Agr. Chem. 103. Lab. and Seminar	3	Biochem. 101A. Lectures	5
Agr. Chem. 104. Seminar	1	Agr. Chem. 105. Thesis	4
Chem. 102A. Organic Chemistry	3	Agr. Chem. 104. Seminar	1
Ent. 118. Insecticides	3	Chem. 121. Adv. Inorganic Chem.	3
Nutr. 126. Advanced Nutrition	3	Soils 123. Soil Bacteriology	3
Soils 122. Soil Chemistry	3		
	16		16



201. **Research in Agricultural Chemistry.**

Open to properly qualified graduate students.
Hours to be arranged.



101A–101B. **Advanced Agricultural Chemistry.** (HOAGLAND)

The technical application of chemical principles to agricultural phenomena and problems; complete and proximate analysis of materials of agricultural interest; choice of methods, limits of permissible error, interpretation of results obtained in the laboratory.

7 hrs., throughout the year; 3 units each half-year. Lecture to be arranged; laboratory, first half-year, Tu Th, 1–4; second half-year, Tu Th, 2–5.

AGRICULTURAL EDUCATION

The Division of Agricultural Education offers certain courses which, accompanying instruction in technical agriculture, education and economics, are intended to prepare students for the efficient teaching of vocational agriculture in the high schools of California and other states.

RECOMMENDATION FOR THE TEACHER'S CERTIFICATE

To obtain the University's recommendation for the regular certificate to teach agriculture in California high schools, the student must meet the requirements of the State Board of Education for high school certification and of the School of Education of the University of California. These include one year of graduate study in addition to the bachelor's degree and the completion of at least 15 units in Education, including the required work in Agricultural Education.

A special certificate to teach vocational agriculture in the high schools of the state may be secured by the graduate of the College of Agriculture who has completed 12 units in Education, including the required work in Agricultural Education. To secure the special certificate, the student must spend the second half of the senior year at the University Farm at Davis. Students should consult the Head of the Division of Agricultural Education regarding their work at the beginning of the junior year.

COURSE OF STUDY

Required for major subject: Botany 116 and Economics 1A or 126.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year at Berkeley		*Second Half-year at Davis*	
A. H. 100. Farm Animals	3	A. H. 105. Judging	4
D. I. 102. Principles of Dairying	3	P. H. 101. Poultry Management	3
Agron. 106. Cereals	3	Oler. 101. Vegetable Gardening	4
Pom. 120 General Pomology	3	Pom. 103. Orchard Practice	3
Irrig. 113. Use of Water	3	Irrig. 120. Irrigation Practice	3
Bot. 116. Economic Botany	3		
	18		17

SENIOR

First Half-year at Berkeley		*Second Half-year at Berkeley*	
Plant Path. 120. Diseases of Plants	4	Veter. 100. Diseases of Farm Animals	3
Entom. 2 and 3. Economic Entomology	3	L. G. 101. Ornamentation of Home Grounds	2
Agron. 118. Farm Management	3	Cit. 101. Citrus Fruits	4
Econ. 126. Agricultural Economics	3	Soils 103. Soils of California	2
Educ. 119. Vocational Education; or 125A. The History of American Education	3	Educ. 105B. Principles of Secondary Education; or 107. The Administration of Public Education; or 121. The High School	3
Entom. 103. Apiculture	2	Rural Inst. 201. Coop. in Marketing	2
		Forestry 1. Elementary Forestry	3
	18		19

125. **The Practice of Teaching Agriculture.** (GRIFFIN)

A five weeks' practice course in selected high schools of the state where agriculture is taught. Making of lesson plans, practice teaching, reports and conferences with supervising teacher and instructor. Supervised practice teaching and observation of methods and management of class and laboratory instruction.

To begin immediately after the close of the second half-year; 4 units. Prerequisite: courses 102 and 104 and Education 223.

100. **Elements of Agriculture, Nature Study and School Gardens.** (KERN)

Aims, methods, and materials used in agricultural instruction in the elementary and grade schools; making of teaching plans; educational value of the school garden; the home garden and the value of home project work in agricultural education. Practical garden work on the campus. Helps for teachers in the way of bulletins, textbooks, etc.

5 hrs., either half-year; 3 units. Lectures, M Tu, 2; laboratory, W, 2–5.

AGRONOMY

The courses outlined by the Division of Agronomy are intended to offer thorough and comprehensive instruction in field and forage crops, crop production, and farm management. They are co-ordinated with the courses in Animal Husbandry, Dairy Industry, Soil Technology, Plant Pathology, Horticulture, and Genetics, so that the student shall get a comprehensive knowledge of the three branches of agricultural science—the soil, the plant, and the animal. The courses in farm management correlate the information obtained in the other courses to the end that the student may understand the principles involved in conducting a farm as a profitable business.

In addition, investigations are conducted in soil management and crop production at the University Farm, Davis; at Kearney Park, Fresno; and at Meloland, Imperial Valley. Through these agencies the students are given varied opportunities for farm practice and investigation. They also afford advantages to students desiring to pursue graduate work in the many phases of soil management or crop production.

COURSE OF STUDY

Summer practice course, Agronomy 99, must precede the junior year.
Required for major subject: Botany 116, Economics 1A or 126, and Entomology 2 and 3.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Agron. 106. Cereals	3
Bot. 116. Economic Botany	3
Irrig. 113. Use of Water	3
Plant Path. 120. Plant Diseases	4
Pom. 101. Fruit Growing	3
	16

Second Half-year *University Farm, Davis*	
Agron. 107. Forage Crops	3
A. H. 101. Animal Management	4
A. H. 107. Animal Breeding	3
Farm. Mech. 101. Farm Machinery	4
Irrig. 120. Irrigation Practice	3
	17

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Agron. 130. Conference	1
Agron. 131A. Thesis	2
Dairying 102. Principles of Dairying	3
Nutr. 106. Feeds and Feeding	2
Rural Inst. 202. Rural Credits and Land Settlement	3
Optional	2
	16

Second Half-year	
Agron. 120. Miscellaneous	3
Citric. 101. Citrus Fruits	4
Genetics 120. Special Topics	3
Vet. Sci. 106. Animal Diseases	3
Vitic. 116. Viticulture	3
	16

99. **Practice in Agronomy.** (ADAMS and HENDRY)

Methods of crop production and farm management, with practice work. Trips into the surrounding country.

Six weeks. Daily, except Sunday, beginning the day after Commencement; 6 units.

106. **Cereals.** (MADSON)

The cereals of America with special reference to California and Pacific Coast conditions. It is highly desirable that the student shall have finished Botany 3 before entering upon the course.

5 hrs., first half-year; 3 units. Lectures, Tu Th, 9; laboratory, Th, 2–5.

ANIMAL HUSBANDRY

Instruction consists of classroom and practice work in management, feeding, breeding, and judging of the various classes of farm animals. The courses are intended to give a knowledge of the recognized breeds and classes of farm animals and of the principles underlying the successful management of a livestock business. The work is planned essentially for men who expect to become farmers and stockmen, and with this end in view is made as practical in its nature as possible.

The University Farm is equipped with modern buildings. Flocks and herds of high-class representatives of most of the pure breeds of farm animals are maintained for study and use in class work. A herd of grade cows, representative of the better class of cows now in the working dairies of the state, is kept for experimental use and to demonstrate how such a herd may be improved by breeding and selection. Fat animals bred and fed at the University Farm for class work have received the highest awards at international and Pacific Coast shows as well as at the California state fairs.

COURSE OF STUDY

Summer practice course, Animal Husbandry 99, must precede the junior year.

Required for major subject: Physiology 1.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

A. H. 100. Farm Animals	3
Econ. 1A. Principles of Economics	3
Ent. 116. Veterinary Parasitology	4
Physiol. 1. Introductory Physiology	4
Pom. 120. General Pomology	3
	17

Second Half-year

University Farm, Davis

A. H. 102. Feeding Farm Animals	4
A. H. 105 or 106. Judging	4
A. H. 107. Principles of Breeding	3
D. I. 127. Milk; or Agron. 107. Forage Crops	3
Vet. Sci. 111. Care and Diseases	4
	18

SENIOR

First Half-year

Bot. 116. Economic Botany	3
Irrig. 113. Supply and Use of Water	3
Agron. 118. Farm Management	3
Vet. Sci. 117. Bacteriology of Milk	3
Agron. 106. Cereals	3
Thesis	2
	17

Second Half-year

University Farm, Davis

A. H. 101. Management of Farm Animals	4
A. H. 105 or 106. Judging	4
A. H. 110. Seminar	1
Irrig. 120. Irrigation Practice	3
Agr. Eng. 101. Farm Machinery and Motors	4
Thesis	2
	18

101. Management of Farm Animals. (——)

The care and management of horses, beef cattle, dairy cattle, sheep and hogs; lectures and practice work in feeding and care of animals at the barn and fitting stock for exhibition purposes.

2 lectures and 2 laboratory periods; 4 units. One laboratory period will include stable practice with the different classes of livestock at the University Farm.

106. Beef Cattle, Horses, and Sheep. (THOMPSON and ——)

Lectures on the origin, history and development of breeds and practice work in judging.

6 hrs., second half-year; 4 units. Lectures, Tu Th, 10; laboratory, Tu Th, 1–3.

CITRICULTURE

Instruction given in citriculture at Berkeley includes lectures and laboratory work covering all phases of the citrus industries of the world and of citrus production in California in particular. Practice work which is adaptable to the laboratory, such as the systematic study of species and varieties, morphology of the fruits and other plant parts, root-stocks and pests, is given at Berkeley. Practice work in land judging, planting, pruning, and packing is given in commercial orchards where special arrangements can be made. Instruction in semi-tropical and tropical fruits, including dates, olives, figs, avocados, guavas, loquats, Japanese persimmons, pomegranates, mangoes, and others, is given by lectures, laboratory, and field practice.

The aim of the division is two-fold: first, to educate by means of courses in citriculture; and second, to equip graduates with the knowledge and practice required successfully to prepare, plant, and operate citrus orchards and plantations of semi-tropical fruits on a commercial scale.

The courses are correlated with those in Agronomy, Pomology, Viticulture, Genetics, Entomology, Plant Pathology, Soils, Irrigation, and Farm Mechanics.

COURSE OF STUDY

Summer practice course, Citriculture 99, must precede the junior year.
Required for major subject: Botany 116 and Economics 1A or 126.
One semester at the University Farm at Davis is optional.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

Bot. 116. Economic Botany	3
Ent. 1 and 3. General and Supplementary Course	3
Irrig. 113. Supply and Use of Water	3
Pl. Path. 120. Diseases of Plants	4
Bot. 105A. Cryptogamic Botany	3
	16

Second Half-year

University Farm, Davis

Agron. 107. Forage Crops	3
A. H. 101. Management of Farm Animals	4
Irrig. 120. Irrigation Practice	3
Agr. Eng. 101. Farm Machinery and Motors	4
Pom. 103. Orchard Practice	3
	17

SENIOR

First Half-year

Agron. 118. Farm Management	3
Cit. 102. Semi-tropical Fruits	4
Cit. 103. Pro-seminar	2
Ent. 118. Insecticides	3
Ent. 124. Citrus Fruit Insects	3
Thesis	2
	17

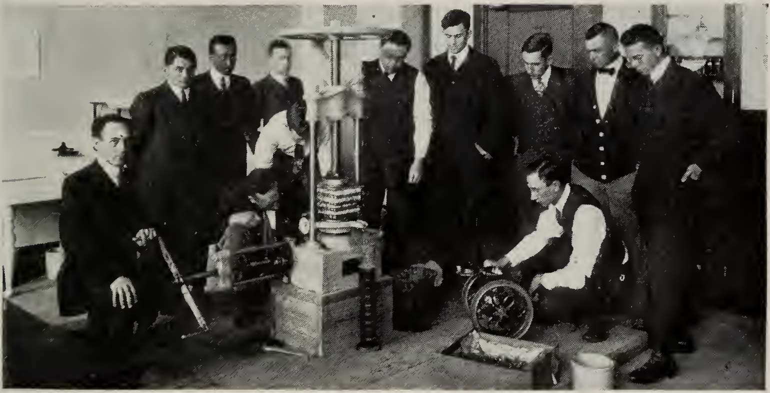
Second Half-year

Cit. 101. Citrus Fruits	4
Cit. 104. Citrus Investigations	1
Cit. 105. Advanced Citrus	3
Econ. 126. Agricultural Economics	3
Pom. 104. Transportation, Storage, and Marketing	3
Thesis	2
	16

99. **Practice in Citriculture.** (Coit and Condit)

A traveling practice course in citrus and other semi-tropical fruits, designed to bring the student into active contact with the great fruit industries of the state and to give him some actual practice in as many of the operations of fruit production as practicable.

Six weeks. Daily, except Sunday, beginning the day after Commencement; 6 units. This course or its equivalent is required for graduation of those specializing in citriculture. Prerequisite: two years' study in a university or college course.



102. **Semi-tropical Fruits.** (Condit)

A detailed study of the semi-tropical fruits grown in California, including the olive, date, fig, avocado, guava, loquat, mango, feijoa, and others. Classification, morphology, propagation, culture, harvesting, packing, etc. Lectures, assigned readings, and laboratory work.

6 hrs., first half-year; 4 units. Lectures, Tu Th S, 11. Laboratory, section I, M, 9–12; II, Tu, 2–5.

DAIRY INDUSTRY

The courses offered in Dairy Industry are designed for students planning to specialize in dairy farming, city milk supply, dairy inspection, and the technical and practical problems concerning the manufacture of butter, cheese, ice cream, and their by-products.

Students desiring to prepare themselves to hold official positions as specialists in dairy manufactures, or hold responsible positions in creameries, cheese factories, or city milk plants, will find the courses especially suited to their needs. The scientific phases of this subject offer attractive opportunities to men interested in teaching and research.

Students interested in dairy production may take considerable work in closely allied divisions while at the same time gaining that familiarity with the manufacture of dairy products which is desirable for men who are to fill responsible positions on dairy farms, with agricultural experiment stations, or college work.

The equipment at the University Farm consists of testing laboratories and a commercial creamery which is in daily operation manufacturing butter, cheese, ice cream, and processing and distributing market milk. The production work is given by the Animal Husbandry Division, which maintains a well-equipped dairy barn and a herd of cows representing the principal dairy breeds.

COURSES OF STUDY

Summer practice course, Dairy Industry 99, must precede the junior year. Required for major subject: Chemistry 5.

EXAMPLE OF PROGRAMME

JUNIOR

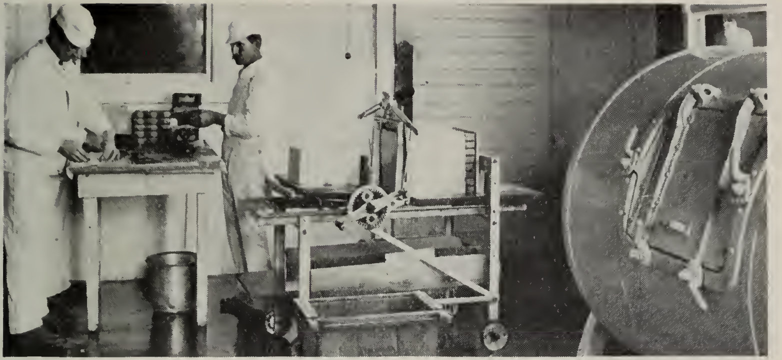
First Half-year	
D. I. 102. Principles of Dairying	3
D. I. 103. (Vet. Sci. 117.) Dairy Bacteriology	3
Econ. 1A. Principles of Economics	3
Chem. 5. Quantitative Analysis	3
Pom. 120. General Pomology	4
	16

Second Half-year *University Farm, Davis*	
D. I. 128. Buttermaking	3
D. I. 131. Advanced Dairy Testing	2
Agr. 107. Forage Crops	3
A. H. Judging Dairy Cattle and Hogs	4
A. E. Farm Machinery and Motors	4
	16

SENIOR

First Half-year	
D. I. 135. Dairy Plant Management	3
Nutr. 109. Dairy Chemistry	3
Agron. 118. Farm Management	3
Irrig. 113. Supply and Use of Water	3
Econ. 120. Business Organization and Administration	3
Thesis	2
	17

Second Half-year *University Farm, Davis*	
D. I. 104. Cheese Making	3
D. I. 130. City Milk Supply and Dairy Inspection	3
D. I. 134. Ice Cream and Dairy By-products	3
A. H. 102. Feeding of Farm Animals	4
D. I. 133. Seminar in Dairy Industry	1
Thesis	2
	16



102. **Principles of Dairying.** (Roadhouse)

The secretion of milk, nature and composition of milk and dairy products; principles and application of the Babcock tests; a survey of the dairy industry; State Dairy Laws and a study of California dairy conditions.

5 hrs., first half-year; 3 units. F, 1; S, 8, 9–12.

128. **Butter Making.** (Denning)

The principles and practice of factory butter making including care of cream, cream grading and ripening, pasteurization, starter-making, churning, moisture and salt control, packing and storage of butter, creamery organization, construction and equipment.

5 hrs., second half-year; 3 units. M, 1; Th, 9; F, 1–4.

ENTOMOLOGY

Entomological instruction is co-ordinated with the instruction in nearly all the divisions in the Agricultural Department and in the Biological and Medical Departments. The relation of insects to human interests is the leading subject matter in all the courses.

Students intending to specialize in Entomology are advised to begin their entomological work in their freshman year, but special introductory courses are provided in the junior year for those who do not begin their entomological studies earlier.

The courses relating to human and animal parasites are presented under *Parasitology.*

Special attention is also given to Taxonomy, General Insect Biology, Forest Entomology, Insecticides, Horticultural Entomology, and Bee Keeping.

Equipment for the advanced study of the latter subject is located at Davis, and graduate work in citrus insects is given at Riverside.

The programmes given in any division with the elective work, summer course, and thesis in Entomology will be acceptable for students specializing in this subject. The example of programme given below is suggested for students specializing in *Horticultural Entomology.*

COURSE OF STUDY

Summer practice course, Entomology 99, must precede the junior year.
Required for major subject: Entomology 1, 2, and 3.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Bot. 105. Cryptogamic Botany	3
Bot. 116. Economic Botany	3
Ent. 1, 2, 3. General, Economic, and Supplementary	5
Pom. 120. General Pomology	4
Elective	2
	17

Second Half-year	
Cit. 101. Citrus Fruits	4
Ent. 4. Elementary Systematic Entomology	3
Ent. 121. Life History Work	3
L. G. 101. Ornamentation of Home Grounds	3
Vit. 116. Maintenance of Vineyards	3
	16

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Ent. 5. General Laboratory	2
Ent. 103. Special Problems	4
Physiol. 110. Cell Processes	2
Pl. Path. 120. Diseases of Plants	4
	15

Second Half-year	
Agr. Ed. 5. Agencies for Rural Progress	3
Ent. 27. Ecology	3
Ent. 112. Advanced Entomology	3
Ent. 120. Inspection Laws	3
Biochem. 1. Elementary Biochemistry	3
	15

124. **Deciduous Fruit Insects.** (Essig)

The most important western insects attacking deciduous fruit and nut trees; classification, structure, life histories and control. Lectures to be illustrated with specimens and lantern slides. The laboratory exercises are essentially illustrative of the lectures and based on the examination of living and preserved specimens from the orchards. For upper division students and specially for those with majors in pomology and entomology.

8 hrs., second half-year; 4 units. Lectures, Tu Th, 4; laboratory, Tu Th, 1–4.

121. **Life-History Work.** (Van Dyke)

Method and practice in working out the life-histories of insects in insectary and field.

6 to 9 hrs., either half-year; 2 or 3 units. Tu W Th, 1–4. Prerequisite: course 1, 2, or 4.

FORESTRY

The Division of Forestry offers the following work:

1. A four-year professional course in general forestry, to train students for the practice of forestry in lines of work where the problems are not too closely specialized along engineering lines. For first two years of this course see page 17.

2. A four-year professional course in forest utilization, to prepare men for work as forest or logging engineers.

3. A five-year professional course combining the work in general forestry and that in forest utilization. This offers an exceptionally strong foundation for a career of wide usefulness.

4. A thorough college training for students who do not expect to practice forestry but who may care to choose forestry as a means of securing a general education and a training which would be useful in business life or otherwise. Any one of the three courses above may be used for this purpose, and for such students the course will be modified to meet individual needs.

5. Courses for students whose major work is in other lines but who wish a general knowledge of the aims and methods of the forester, or who wish detailed technical instruction in certain parts of forestry, such as wood technology.

6. A special arrangement of courses for students in the College of Commerce who are preparing for the wholesale or retail lumber business.

7. A short course of twelve weeks, for men in the United States Forest Service or in the employ of lumber companies.

Detailed information regarding these various lines of work and programmes of study are given in the Announcement of Courses in Forestry, which can be procured by addressing the Division of Forestry, College of Agriculture, University of California, Berkeley, California.

99. Practice in Forestry.

(Bruce in charge; Mulford, Mason, and Metcalf)

Practice in scaling and estimating timber and the study of its growth; timber survey of a large tract; detailed study of a logging and milling operation.

11 weeks, summer camp; 6 units. To be held in the pine region of the Sierra or in the redwood region, near large logging operations.

115. Logging. (Bruce)

The manufacture and transportation of saw logs from stump to mill.

6 hrs., second half-year; 3 units. Lectures, M W, 9; laboratory, Th, 1–5.

IRRIGATION

Instruction in Irrigation consists (*a*) of work given at Berkeley by the Department of Irrigation and (*b*) of work given at Davis by the Division of Irrigation Investigations of the Department of Agriculture. The work given at Davis is confined to two courses in practical field problems, for which Irrigation 113 and Civil Engineering 1A or 1E are needed as prerequisites. The instruction offered at Berkeley by the Department of Irrigation for students in the College of Agriculture is designed to meet the needs of the following classes of students:

First—Those who are planning to use a knowledge of irrigation practice as an aid to successful agriculture. For these students the following courses are offered: Irrigation 101, 104, 105, 113, 115, and 207. Course 113 on the agricultural use of water and irrigation practice is especially recommended.

Second—Those who are preparing themselves for positions in the operation, maintenance, and management of irrigation systems and companies; or for investigational work such as that carried on by the United States Department of Agriculture or in agricultural colleges. For these students the suggested course of study outlined below gives the proper correlation and sequence of allied subjects.

COURSE OF STUDY

For students in the College of Agriculture who wish to prepare for irrigation farmer, water master, manager, or superintendent.

Required for major subjects: General Physics (2A), Elements of Analysis (Mathematics 1), and Surveying (Civil Engineering 1A, 1B), C. E. 3A or Soil Tech. 99.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
A. H. 100. Farm Animals	3
Econ. 14A. Accounting	3
Irrig. 113. Agricultural Use of Water and Irrigation Practice	3
Physics 2A. General Physics	3
Pom. 120. General Pomology	3
	15

Second Half-year	
Agron. 120. Crop Production	3
C. E. 8. Materials of Construction	2
Econ. 126. Agricultural Economics	3
Irrig. 101. Institutions and Economics	3
Irrig. 105. Agricultural Hydraulics	3
Soils 102. Advanced Soil Physics	3
	17

SENIOR

First Half-year	
Agron. 118. Farm Management	3
C. E. 112. Dams	1
Cit. 104. Citrus Investigations	2
Irrig. 104. Drainage	2
Irrig. 115. Drawing	3
Irrig. 207. Operation and Maintenance	2
Rur. Inst. 202. Rural Credits and Land Settlement	2
	15

Second Half-year *University Farm, Davis*	
Agron. 111. Field Practice	3
Irrig. 120. Irrigation Practice	3
Farm Mech. 2. Carpentry	2
Farm Mech. 101. Machinery and Motors	4
Oler. 101. Vegetable Gardening	4
Thesis	1
	17

120. **Irrigation Practice.** (Beckett)

Practical field problems in the preparation of land, conveyance, measurement, and application of water to various crops.

7 hrs., second half-year; 3 units. Lecture, W, 10; field work, section I, M F, 8–11; II, Tu, 3–5; W, 1–5; III, Tu, 1–4, S, 9–12. Prerequisite: Irrigation 113; Civil Engineering 1A or 1E.

113. **Agricultural Use of Water and Irrigation Practice.** (Harding)

Soil moisture and plant growth; disposal of irrigation water applied to the soil; water requirement of crops; duty of water; preparation of land and methods of irrigation; farm ditches and structures; small pumping plants; measurement of water.

3 hrs., first half-year; 3 units. Three sections: I, Tu Th S, 9; II, Tu Th S, 10; III, Tu Th S, 11. Prerequisite: at least junior standing.

LANDSCAPE GARDENING AND FLORICULTURE

The course in Landscape Gardening is designed, first, to offer professional instruction both theoretical and practical to those who desire to become either successful practitioners of the art, competent office assistants, or reliable superintendents of construction; and, second, to furnish instruction of an untechnical nature that will enable others to become familiar with the fundamental principles governing the art of design.

The course in Floriculture is designed to furnish theoretical and practical instruction to those who intend to eventually become wholesale or retail commercial growers of cut flowers and potted plants, or competent florists on private estates or in public parks. As facilities permit, students will be allowed to specialize in the growing of certain crops and in store management, including artistic design and decoration and other phases.

COURSE OF STUDY

Summer practice course, Landscape Gardening 99 or Floriculture 99, must follow the junior year.

Requirements for major subject in Landscape Gardening: Botany 104A, 104B, Drawing A-B and C-D.

Requirements for major subject in Floriculture: Botany 104A, 104B, and Economics 1A or 126.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Bot. 116. Economic Botany	3	C. E. 8D. Materials	2
Drawing 3 A. Descriptive Geometry	2	Drawing 3B. Descriptive Geometry	2
Drawing 114A. Advanced Free-Hand	2	Drawing 114B. Advanced Free-hand	2
Irrig. 113. Supply and Use of Water	3	Ent. 114. Forest Insects	3
L. G. 103. Theory of Design	4	L. G. 104B. Plant Materials	2
L. G. 104A. Plant Materials	2	L. G. 105. Elementary Landscape Gardening	4
	16		15

SENIOR

First Half-year		*Second Half-year*	
Arch. 101A. Elements of Architecture	3	Arch. 101B. Elements of Architecture	3
L. G. 107. History and Literature	2	C. E. 116. Contracts and Specifications	1
C. E. 106. Highway Engineering	2	Drawing 125. Perspective	2
L. G. 104C. Plant Materials	2	L. G. 106B. Advanced Landscape Gardening	4
L. G. 108. Tree Surgery	3	Thesis	2
L. G. 106A. Advanced Landscape Gardening	4	Elective	3
Thesis	2		
	18		15

201. Modern Civic Art. (Gregg)

Advanced problems in design with special reference to city parks, municipal park systems, recreation areas, civic centers and other civic features, as they form intimate parts of the city plan as a complete whole. Lectures, outside reading, and the preparation in various forms of plans, specifications, and reports.

36 hrs., first half-year; 12 units.

106a–106b. **Advanced Landscape Gardening.** (Gregg)

The more advanced problems of design and reconstruction from topographic and transit surveys as offered by the larger areas of parks, playgrounds, and country estates, with detailed plans, reports, and estimates.

12 hrs., throughout the year; 4 units each half-year. M, 9–12; Tu Th F, 2–5. Prerequisite: course 105.

NUTRITION

The Division of Nutrition offers instruction in human and animal nutrition. The courses are co-ordinated with those of Agricultural Chemistry, Animal Industry, Dairy Industry, Public Health, and Physical Education.

Instruction in animal nutrition is offered through lectures, laboratory practice and field experiments in nutritional physiology, digestion experiments, and methods of feeding stock and poultry.

Courses in human nutrition are offered through lectures and laboratory practice which include (1) general and special instruction in digestion and metabolism, food requirements and food values, leading to positions in research laboratories and commissary departments; (2) general and special training in methods of food analysis, detection of preservatives and adulterants, leading to positions in government food laboratories.

COURSE OF STUDY

Summer practice course, Nutrition 99. Time to be arranged.
Required for major subject: Chemistry 5.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

Econ. 1A. Principles of Economics	3
Chem. 8A. Organic Chemistry	2
Nutr. 106. Feeds and Feeding	3
Nutr. 114. Fundamentals of Nutrition	2
Pom. 120. General Pomology	4
Rur. Inst. 202. Rural Credits and Land Settlement	2
	16

Second Half-year

Nutr. 116. Foods and Food Products	2
Nutr. 120. Pro-seminar	2
Nutr. 129. Problems in Nutrition and Food Chemistry (Thesis)	3
Rur. Inst. 201. Co-operation in Marketing	2
Vet. Sci. 100. Diseases of Farm Animals	3
Nutr. 117. Laboratory Course in Food Analysis	3–4
	15–16

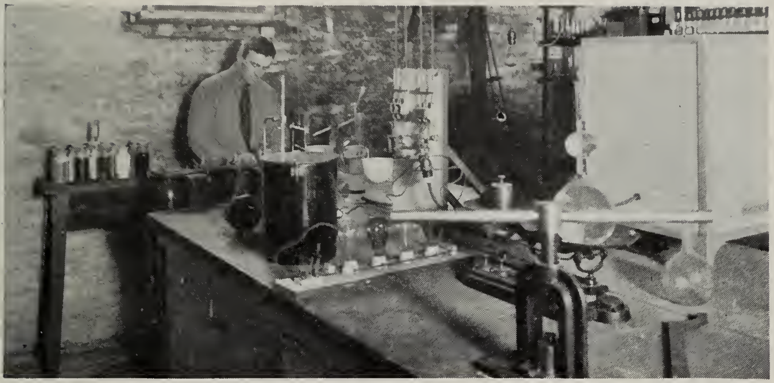
SENIOR

First Half-year

Nutr. 126. Advanced Nutrition	3
Nutr. 127. Laboratory Course in Advanced Nutrition	2
Vet. Sci. 117. Bacteriology of Milk	3
Agron. 106. Cereals	3
Nutr. 129. Problems in Nutrition and Food Chemistry (Thesis)	2
A. H. 100. Farm Animals or elective	3
	16

Second Half-year

Nutr. 119. Advanced Course in Food Chemistry	3
Nutr. 129. Problems in Nutrition and Food Chemistry (Thesis)	2
Pom. 104. Fruit Transportation, Storage, and Marketing	3
Vit. 112. Fruit and Vegetable Products	3
Cit. 101. Citrus Fruits; or Elective	4
	15



231. **Research in Food Chemistry and in Nutrition.**
(JAFFA and MATTILL)

Hours and credit to be arranged.

127. **Laboratory Course in Advanced Nutrition.** (MATTILL)

Designed to accompany course 126, and comprising a study of digestion and metabolism, with practice in nutrition experiments on animals and man.

6 hrs., first half-year; 2 units. Hours to be arranged. Prerequisite: Chemistry 1A–1B, 5, 8A–8B; Physiology and Agricultural Chemistry 101A–101B recommended.

PARASITOLOGY

The courses are intended to offer thorough training in Parasitology to equip prospective teachers in this field, for which there is an occasional demand, and for the training of experts as demanded in the various fields of Public Health and Animal Industry. Courses are also designed to supplement the instruction in Veterinary Science, Animal Industry, Hygiene and Public Health, particularly Rural Public Health, in which a special course is offered in this division.

An adequate collection of parasitic protozoa, worms, insects, and arachnids is available for study. Ample laboratory facilities are offered, including the usual biological equipment in addition to a bacteriological incubator, autoclave, large regulated insectary, and in a separate building ample equipment for animal experimentation.

Among the problems receiving special attention during the past few years are malaria control, house-fly control, bionomics of fleas and ticks, venomous ticks and spiders, parasites of poultry, parasites of deer, liver flukes of sheep, scab and mange in certain domesticated animals, lung worms in goats, etc.

COURSE OF STUDY

Summer practice course, Entomology 99, must precede the junior year.

Required for major subject: Physiology 107, Hygiene 3 (Epidemiology), Entomology 1, 4, Zoology 1A, Pathology 1.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Biochem. 1. Elementary Biochemistry	3
Ent. 116. Veterinary Parasitology	4
Vet. Sci. 117. Bacteriology of Milk	3
Juris 18A. Commercial Law	2
Physiol. 107. Physiology	4
	16

Second Half-year	
Ent. 2 and 4. Economic and Systematic Entomology	5
Ent. 126. Medical Parasitology	3
Ent. 127. Medical Parasitology Lab.	2
Hygiene 108. Applied Hygiene	3
Vet. Sci. 100. Diseases of Farm Animals	3
	16

SENIOR

First Half-year	
Ent. 129. Thesis	2
Ent. 200A. Seminar	1
Ent. 211. Growth	2
Hygiene 104. Health Surveys	3
A. H. 100. Farm Animals	3
Pol. Sci. 110A. Local Government	3
Zool. 110. Protozoology	3
	17

Second Half-year	
C. E. 124. Water Supply and Sewage	3
Econ. 110A. Elementary Statistics	3
Econ. 126. Agricultural Economics	3
Ent. 107. Microtechnique	3
Ent. 129. Thesis	2
Ent. 200B. Seminar	1
	15

99. **Practice in Entomology.** (The Staff)

In the summer of 1915 a study of forest insects in the high Sierra was engaged in. In 1916 a mosquito-malaria survey of the state was undertaken. In 1919 the work will consist of practice in the management of out-apiaries. A camp will be established in one of the principal honey districts of the state. Students will be given practice in the various operations.

6 weeks, beginning the day after Commencement; 6 units.

116. **Veterinary Parasitology.** (Herms and Freeborn)

The relation of animal parasites and disease carriers to domesticated animals, with special emphasis placed on control. Specially designed for students in veterinary science and animal industry. This course satisfies in full the requirements in parasitology in class A veterinary colleges.

8 hrs., first half-year; 4 units. Lectures, M W, 10; laboratory, M W, 1–4. Prerequisite: Zoology 1A and Bacteriology 1, or equivalent.

PLANT PATHOLOGY

The instruction offered in plant pathology is intended to meet the needs of students wishing to specialize in the subject, and also those who want some knowledge of the nature of plant diseases to aid them in agricultural pursuits. In the past a number of students have taken practically all the undergraduate work offered in this division, although planning to enter work other than technical plant pathology. Such students have engaged in high-class agriculture, horticulture, teaching, and technical work in other lines with marked success.

For those desiring to make plant pathology their profession it may be said that the facilities for work at Berkeley are being constantly improved, while the problems to be investigated in the accessible regions in horticulture, agriculture, floriculture, and forestry are very numerous.

Those intending to specialize in the subject should have early in their work thorough training in botany, chemistry, physiology, bacteriology, entomology, soils, foreign languages, and actual experience in the handling of crops.

COURSE OF STUDY

Summer practice course, Plant Pathology 99, must precede the junior year. Required for major subject: Botany 105A.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Bot. 105A. Cryptogamic Botany	3	German 3B. Technical	3
German 3A. Technical	3	Bot. 104B. Phaenogamic Botany	3
Chem. 6A. Quantitative Analysis	3	Chem. 6B. Quantitative Analysis	3
Pl. Path. 120. Diseases of Plants	4	Ent. 1. Economic Entomology	4
Pom. 120. General Pomology	3	Ent. 2. Economic Entomology	2
		Elective	3
	16		18

SENIOR

First Half-year		*Second Half-year*	
Bot. 109A. Vegetable Histology	3	Bot. 109B. Vegetable Histology	3
Chem 8A. Organic Chemistry	2	Chem. 8B. Organic Chemistry	2
Chem. 9. Organic Chemistry Lab.	3	Chem. 100. Organic Chemistry Lab.	3
Pl. Path. 122A. Advanced Course	4	Pl. Path. 122B. Advanced Course	4
Pl. Path. 125A. Spec. Topics (Thesis)	2	Pl. Path. 125B. Spec. Topics (Thesis)	2
Pl. Path. 126. Pro-seminar	1	Pl. Path. 126. Pro-seminar	1
	15		15

120. The Diseases Affecting Cultivated Plants in California. (Horne and Smith)

Lectures and laboratory studies on diseases of economic plants. A beginning course required of juniors whose major is plant pathology.

8 hrs., first half-year; 4 units. Lectures, Tu Th, 8; laboratory, section I, Tu Th, 9–12; II, Tu Th, 1–4. Prerequisite: Botany 2 and 3, Bacteriology 1.

122a–122b. **Advanced Course.** (Smith and Horne)

A comprehensive technical course upon the principles of pathology, nature of disease, and the chief disease-inciting influences; study of disease-producing organisms, their development, activities, and relation to host plants, by means of microscopic, cultural, histological, and infection methods.

8 hrs., throughout the year; 4 units each half-year. Lectures, M W, 8; laboratory, M W, 9–12.

POMOLOGY

The courses in Pomology are designed to give thorough instruction in the fundamental principles of fruit growing with special reference to the culture, transportation, storage, marketing, and utilization of deciduous fruits, small fruits, and nuts. Along with the instruction in the technical aspects, laboratory exercises and demonstrations are given in the laboratories at Berkeley and practice work is given at the University Farm, Davis. Students majoring in Pomology will spend the spring semester of their junior or senior years at the University Farm as a requirement for graduation. The work at the farm includes practice courses in all phases of nursery and orchard work. Opportunity is also given for students, while at the farm, to take up work along the other lines of agriculture, thus broadening their training and point of view.

All students expecting to major in Pomology should confer with the head of the division as early as possible in order that proper electives may be selected to meet the requirements of their major work.

COURSE OF STUDY

Summer practice course, Pomology 99, must follow the junior year.
Required for major subjects: Botany 116 and Economics 1A or 126.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

Bot. 116. Economic Botany	3
Ent. 124. Deciduous Fruit Insects	4
Irrig. 113. Supply and Use of Water	3
Pl. Path. 120. Diseases of Plants	4
Pom. 101. Principles of Fruit Growing	3
	17

Second Half-year

University Farm, Davis

A. H. 105. Judging	4
Irrig. 120. Irrigation Practice	3
Agr. Eng. 101. Farm Machinery and Motors	4
Pom 103. Orchard Practice	3
Oleri. 101. Vegetable Gardening	4
	18

SENIOR

First Half-year

Agron. 118. Farm Management	3
Ent. 118. Insecticides and Fungicides	2
Gen. 120. Special Topics; or Rural Inst. 202. Rural Credits	2
Pom. 102. Orchard Fruits	3
Pom. 105A. Pro-seminar	1
Pom. 106. Systematic Pomology	2
Thesis	2
	15

Second Half-year

Cit. 101. Citrus Fruits; or Vit. 116. Maintenance of Vineyards	4
Econ. 126. Agricultural Economics	3
Pom. 104. Transportation, Storage, and Marketing	3
Pom. 105B. Pro-seminar	1
For. 1. Elements of Forestry; or Pom. 107. Nuciculture	3
Thesis	2
	16

103. **Orchard Practice.** (HENDRICKSON)

A laboratory course designed to give the student actual practice under orchard and field conditions in the various operations of deciduous fruit production; propagating, planting, pruning, spraying, etc. Given at Davis.

9 hrs., second half-year; 3 units. W F, 1–5:30. Required of all juniors with a major in pomology. Prerequisite: course 101.

106. **Systematic Pomology.** (HENDRICKSON)

A technical study of fruit varieties, their botanical and varietal relationships; description, identification, scoring and judging. Laboratory work with informal lectures and recitations.

6 hrs., first half-year; 2 units. Th F, 2–5. Required of all seniors with a major in pomology. Prerequisite: course 101.

POULTRY HUSBANDRY

This course has been designed to give the student a comprehensive and detailed grasp of principles and their practical application to the business side of poultry farming in order that he may be better fitted to handle successfully the economic problems encountered in the development and management of a poultry plant. A thorough training in the science and art of Poultry Husbandry requires not only that one be versed in hatching, rearing, feeding, breeding, and caring for fowls but also that one know how to handle tools, construct poultry buildings, till the soil and raise grain and forage crops for the stock, irrigate these crops, operate and care for farm machinery, and, finally, to know how to keep accounts and manage a farm on a sound financial basis.

A well-equipped poultry plant of ten acres at the University Farm, on which are kept 2000 fowls of over twenty-five representative varieties, affords students an abundant opportunity to secure practical experience and also to pursue advanced work along investigational lines.

COURSE OF STUDY

Summer practice course, Poultry Husbandry 99, must precede the junior year.

Required for major subject: Physiology 1.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year

Ent. 116. Veterinary Parasitology	4
Pom. 120. General Pomology	3
Physiol. 1. Introductory Physiology	4
Econ. 14. Accounting	3
Econ. 1A. Principles of Economics	3
	17

Second Half-year

University Farm, Davis

D. I. 127. Milk and Milk Products	3
A. E. 101. Farm Machinery and Motors	4
P. H. 101. Feeding and Care	3
P. H. 102. Management	3
Vet. Sci. 111. Diseases of Animals	4
	17

SENIOR

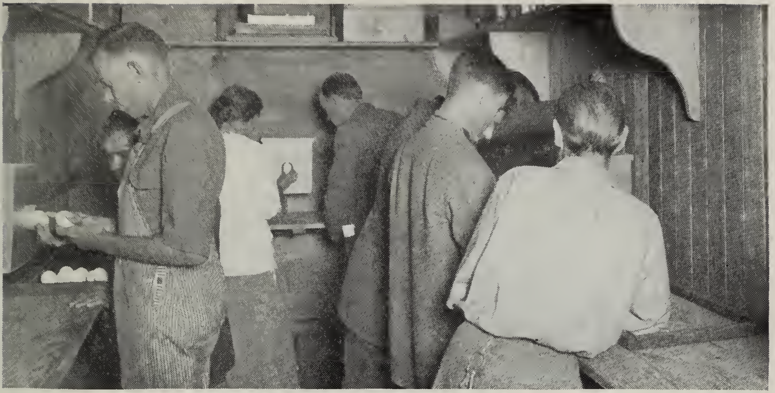
First Half-year

Agron. 106. Cereals	3
Agron. 118. Farm Management	3
Bot. 116. Economic Botany	3
Irrig. 113. Supply and Use of Water	3
Vet. Sci. 117. Bacteriology of Milk	3
Thesis	2
	17

Second Half-year

University Farm, Davis

Agron. 107. Forage Crops	3
A. H. 102. Feeding Farm Animals	4
Irrig. 120. Irrigation Practice; or Pom. 103. Orchard Practice	3
P. H. 104. Pro-seminar	2
P. H. 105. Research	3
Thesis	2
	17



101. **Poultry Husbandry.** (Dougherty and Lloyd)

The feeding, housing, breeding, and general management of poultry; study of the egg; anatomy and physiology of poultry; parasites and sanitation.

5 hrs., second half-year; 3 units. Lectures, Th F, 11; laboratory, F, 2–5.

102. **Poultry Management.** (Dougherty and Lloyd)

A practice course in operating incubators, keeping records, hatching eggs, brooding chicks, feeding and caring for pens of fowls.

Second half-year; 3 units. Practice, M Tu W Th F S Sun, 8–9, 11–12, 4–5. Course 101 must precede or accompany this course.

SOILS

The curriculum for the prospective soils specialist as indicated below is of such a nature as to make it comprehensive. It is intended to give him a good insight into the sciences which are intimately concerned in the production and maintenance of soil fertility and a knowledge of the best methods for their correlation. Thus studies in soil mapping, soil classification, soil physics, soil chemistry, soil bacteriology, and plant physiology are emphasized and related. The work in soil mapping and classification is intended to bring the student into close touch with soils and crops in the field and the laboratory and greenhouse work to give him light on the more intimate nature of the constitution of soils.

The kind of training just outlined equips the soils specialist with qualifications for work in teaching and investigation in state or federal government, or private institutions which require highly trained men.

The student is advised to take one year of graduate study before going into investigational work. Every encouragement is extended to those who pursue graduate studies.

COURSE OF STUDY

Summer practice course, Soil Technology 99, must precede the junior year. Major subject requirement: Chemistry 5.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year		*Second Half-year*	
Agron. 106. Cereals	3	Agron. 108. Agrostology	3
Bot. 116. Economic Botany	3	Cit. 101. Citrus Fruits	4
Chem. 8A. Organic Chemistry	2	Soils 101. Soils of the U. S.	3
Pom. 120. General Pomology	3	Soils 102. Advanced Soil Physics	3
Soils 122. Soil Chemistry	3	Soils 123. Soil Bacteriology	3
Soils 126. Pro-seminar	1	Soils 126. Pro-seminar	1
	15		17

SENIOR

First Half-year		*Second Half-year*	
Agron. 118. Farm Management	3	Agr. Chem. 102. Chemistry of Fertilizers	3
A. H. 100. Farm Animals	3	Elective	4
Irrig. 113. Supply and Use of Water	3	Econ. 126. Agricultural Economics	3
Irrig. 104. Drainage	2	Irrig. 101. Institutions and Economics	3
Pl. Path. 120. Diseases of Plants	4	Soils 126. Pro-seminar	1
Soils 126. Pro-seminar	1	Soils 127. Thesis	2
Soils 127. Thesis	2		
	18		16

99. **Practice in Soil Surveying.** (SHAW and SMITH)

A six weeks' course of study on the methods of classifying and mapping soils, consisting primarily of practical field work in soil surveying; the construction of base maps; and the preparation of reports on the surveyed areas. Studies of alkaline soils and their reclamation, the adaptation of crops to soils, problems of irrigation, drainage, and soil management. The field work will be supplemented by an inspection trip covering a large part of the state.

6 units. Prerequisite: course 1.

122. **Soil Chemistry as Related to Soil Fertility.**

(LIPMAN and GERICKE)

The chemical examination of soils, including short methods for some important determinations, and complete analyses of soils; greenhouse experiments in conjunction. Laboratory and greenhouse exercises, recitations and lectures.

9 hrs., first half-year; 3 units. M W F, 1–4. Prerequisite: Chemistry 1A–1B, 5, and Soil Technology 1.

VITICULTURE AND ENOLOGY

Instruction in this division is given to regular and special students at Berkeley by means of courses of lectures on grape growing, wine making, food preservation, and technical zymology, supplemented by laboratory and field courses. Its aim is to prepare students to become efficient managers of vineyards, cellars, and packing houses, or educators and specialists in the various viticultural, fermentative, and food preserving industries. At Davis appropriate instruction in grape growing is given to students. At suitable points throughout the state instruction is given to those actually engaged in the industries by means of lectures and demonstraions.

COURSE OF STUDY

A. VITICULTURE B. ENOLOGY C. TECHNICAL ZYMOLOGY

Summer practice course, Viticulture and Enology 99, must precede the junior year.

Required for major subject: A, Botany 116 and Economics 1A or 126; B and C, Chemistry 5.

EXAMPLE OF PROGRAMME

JUNIOR

First Half-year	
Bot. 116. Economic Botany	3
Ent. 2 and 3. Economic and Supplementary Course	3
Irrig. 113. Supply and Use of Water	3
Pl. Path. 120. Diseases of Plants	4
Pom. 101. Principles of Fruit Growing	3
	16

Second Half-year *University Farm, Davis*	
A. H. 101. Management of Farm Animals	4
D. I. 127. Milk and Milk Products	3
Irrig. 120. Irrigation Practice	3
Agr. Eng. 101. Farm Machinery and Motors	4
Pom. 103. Orchard Practice	3
	17

SENIOR

First Half-year	
Agron. 118. Farm Management	3
Econ. 1A. Principles of Economics	3
Pom. 106. Systematic Pomology	2
Pom. 102. Orchard Fruits	3
Vit. and Enol. 114. Vinification	3
Thesis	2
	16

Second Half-year	
Agr. Chem. 102. Chemistry of Fertilizers	3
Econ. 1B. Principles of Economics	3
Pom. 104. Transportation, Storage, and Marketing	3
Vit. and Enol. 116. Maintenance of Vineyards	3
Vit. and Enol. 117. Diseases of the Vine	2
Thesis	2
	16

116. **Viticulture.** (BIOLETTI)

Methods of establishing and maintaining vineyards, with special reference to conditions existing in California.

3 hrs., second half-year. M W F, 9.

115. **Fruit and Vegetable Products.** (CRUESS)

Laboratory exercises in the preparation, fermentation, and preservation of vegetable products. Canning fruit juices, jellies, vinegar, and other products and by-products given particular attention.

9 hrs., second half-year; 3 units. M W F, 1–4.

INSTRUCTION NOT REPRESENTED BY MAJOR SUBJECTS

Certain divisions of the Department of Agriculture offer instruction which is not represented by the seventeen major subjects described in the foregoing pages. The courses given may be elected by any student having the necessary preparation.

AGRICULTURAL ENGINEERING

Present equipment permits of three courses which may be grouped under the head of Farm Mechanics:

(1) *Building Construction.*—A shop practice course supplemented with lectures arranged for those who have to do with the repair and construction of farm buildings. The course includes instruction in the use and care of tools and elements of carpentry, which is followed by actual construction of parts of various farm buildings.

101. **Farm Machinery and Farm Motors.** (Davidson and Fletcher)

Economics of farm machinery, mechanics of machines, materials of construction. The development, construction, functions, adjustment, operation, and repair of farm machinery. The production and transmission of power. Principles of draft. The study of the horse as a motor; gasoline and oil engines; electric power; tractors. Laboratory work consists in the study, operation, and adjustment of the machines discussed in the classroom.

8 hrs., second half-year; 4 units. Lectures, section I, Tu F, 10; II, Tu F, 11. Laboratory, section I, M F, 8–11; II, M, 1–5, Tu, 3–5; III, W, 9–11, F, 1–5.

(2) *Forge Practice.*—A course including the principles and practice of general blacksmithing which will be of value to those who have charge of the management and care of the machinery equipment of the farm.

(3) *Farm Machinery.*—A course treating of the general subject of farm machinery and the power equipment of the modern farm, arranged primarily for the student who intends to make the farm the object of his life's work. The course includes the construction, functions, and methods of operating, adjusting, and repairing farm machinery; the principles of draft; the measurement, production, and transmission of power for farm use. The laboratory work, which forms a large part of the course, is carried on as far as possible in the field, and consists of practical organized tests and demonstrations which set forth the essential features of efficient operation.

GENETICS

Opportunity is offered to properly qualified students to pursue individual study of special topics, including a pro-seminar, meeting at least once each week for conference, reports, and discussions. For students with such major subjects as agronomy, pomology, citriculture, viticulture, floriculture, forestry, entomology, plant pathology, or animal husbandry, a topic in genetics may be so chosen as to make it closely correlated with the major subject. Present facilities will permit of the following lines of work:

200. **Research in Genetics.**
Plant breeding investigations.

1. Study of variation in plants and animals with reference to evolution and breeding.
2. Breeding experiments with seed plants and insects.
3. Cytological study of the reproductive processes in seed plants and insects.
4. Statistical study of variation and inheritance in tobacco, crepis, and maize.

OLERICULTURE

The work is given at the University Farm, Davis, where ample areas for the practical work are available. The course deals with the principles of vegetable gardening and with the methods of production and marketing applicable to California conditions.

101. **Vegetable Gardening.** (ROGERS)

General principles of vegetable gardening; detailed directions for the production and marketing of vegetables and vegetable seed production under California conditions, supplemented by practical work in the garden.

6 hrs., second half-year; 4 units. Lectures, M, 11; T, 11; W, 8; 3 hrs. practicums to be arranged.

VETERINARY SCIENCE

The courses offered are designed to supplement the instruction in animal husbandry, poultry husbandry, nutrition, agricultural education, parasitology, hygiene and public health. The instruction in veterinary science does not prepare for the practice of veterinary medicine.

The following equipment and activities are under the supervision of members of the staff of the veterinary division and are utilized in instruction.

The Veterinary Clinic at the University Farm, Davis, affords opportunity for students to obtain instruction concerning the more common unsoundnesses and non-infectious diseases of farm animals. The veterinary building at Davis, used exclusively for the conduct of this clinic, is equipped with all that is necessary for advanced work in comparative pathology and bacteriology, including dairy bacteriology.

The Veterinary and Dairy Bacteriology Laboratory at Berkeley occupies a separate building and is equipped with all necessary apparatus for advanced work in bacteriology and pathology.

100. Diseases of Farm Animals. (HARING and HART)

The more common diseases of domesticated animals. For students in Berkeley who are unable to take advanced work in veterinary science at the University Farm.

5 hrs., second half-year; 3 units. Lectures, Tu Th, 1; laboratory or clinic, Th, 2–5.

111. Diseases of Farm Animals. (HAYES)

The anatomy, physiology and diseases of farm animals; the common diseases of horses, cattle, sheep, and swine receive attention. (Given at Davis.)

6 hrs., second half-year; 4 units. Lectures, W Th F, 1; laboratory, Th, 2–5.

The University of California Certified Dairy in Berkeley is a self-supporting institution, and is operated as a first-class market milk dairy, producing certified milk, cream, and skim milk. This dairy is utilized for student instruction. The equipment consists of 120 acres of pasture land, a barn and sanitary milking stable, a milkhouse equipped with a refrigerating plant, sterilizer, bottling machine, and other modern dairy machinery.

The Hog Cholera Serum Laboratory is situated in East Oakland. Anti-hog-cholera serum and virus are manufactured here and sold to farmers at actual cost of production. The sales during the past year were sufficient to immunize 50,000 hogs. About 100 head of swine are maintained at this laboratory for use in making the serum and virus.

The Veterinary Tract is 100 acres of land in Strawberry Cañon, Berkeley, set apart by the Regents of the University to be used in experimental work concerning bovine tuberculosis. The equipment consists of two barns and a cottage. At present 60 head of cattle are maintained here for purposes of research concerning tuberculosis.

Dairy Certification consists of expert work in the supervision of certified dairies for the San Francisco County and Alameda County Medical Milk commissions. This includes bacteriological examinations of milk, semi-monthly inspections of dairies, distributing stations, and wagons, and the semi-annual tuberculin testing of about 1000 dairy cows. Students are given an opportunity to take part in a portion of this work.

GENERAL INFORMATION

EXPENSES OF STUDENTS

Tuition in the University, except in the colleges of Medicine, Pharmacy, and Dentistry, is free to residents of the state. Non-residents of California are charged a tuition of $10 each half-year. The following incidental expenses are to be met:

Gymnasium and Infirmary Fees.—The Gymnasium fee is $2 per half-year and the Infirmary fee is $3 per half-year; both are payable by every student, graduate or undergraduate, before his study card is filed. These fees entitle students to gymnasium and hospital privileges and are not remitted, in whole or in part, for those who may not desire to make use of these privileges. Gymnasium privileges comprise, besides the use of the gymnasium, tennis courts, swimming pool, baths, lockers, wash rooms, etc. The Infirmary fee entitles students, in case of illness, to hospital care (cost of surgical operations not included) or dispensary treatment. One-half of the amount of these fees is returned to students who leave the University during the first half-year before September 1, or during the second half-year before February 1.

Laboratory Fees.—In the laboratories a charge is made for materials actually used. This charge for students in the elementary laboratories amounts to from $5 to $30 per annum.

Military Uniforms.—Every able-bodied male undergraduate student is required to take military exercises during his first two years in the University. A sum sufficient to cover the cost of the uniform must be deposited with the Comptroller immediately after admission. Uniforms made by any other than the authorized manufacturer will not be accepted.

Board and lodging may be obtained in private families in or near Berkeley and Oakland at from $30 to $45 a month. They may occasionally be had in return for various personal services in the household. The hours of recitation are such that many students reside in Oakland and San Francisco. The journey from San Francisco requires 40 minutes. The cost of board and lodging in students' boarding clubs ranges from $20 to $25 a month. A few students ''board themselves'' for as low as $20 a month, but this plan of living is not generally to be recommended.

There are no dormitories maintained by the University. Lists of boarding places approved by the University authorities are published at the opening of every session, one list for men and another for women.

The ordinary yearly expenses of a student in the academic departments, including personal expenses, need not exceed $500.

Opportunities for Self-Support.—Board and lodging can often be obtained in exchange for three or four hours of household work daily. Self-supporting students are respected. Men students desiring employment should apply for information at the Employment Bureau, Room 104, California Hall; women at the office of the Dean of Women. The Young Men's and Young Women's Christian Associations act as bureaus of information concerning boarding places and opportunities for remunerative employment. These agencies, however, can do little for students who are not actually on the ground to negotiate for themselves. It is usually so difficult for a stranger to secure remunerative employment from the start that, in general, no one should come to Berkeley expecting to become self-supporting through the University course without having on hand at the beginning sufficient funds to cover the expenses of the first year.

SUMMER SESSION

The Summer Session of six weeks is designed for teachers and other persons who are unable to attend the University during the fall and spring sessions. An Announcement of the Summer Session is issued in March of each year and may be obtained by addressing the Recorder of the Faculties, Berkeley, California.

CALENDAR

1919

August 4, Monday—Applications for admission and credentials of recommended graduates of accredited high schools to be filed with the Recorder of the Faculties.

August 7, Thursday—Academic year begins.

August 7, Thursday–August 12, Tuesday—Matriculation examinations at Berkeley for the Academic Colleges. Filing of applications for admission to advanced and graduate standing and to special status.

August 15, Friday; August 16, Saturday; August 18, Monday—All officers of instruction in the colleges at Berkeley keep office hours each day from 9 a.m. to 12 m. Also on Friday and Monday from 2 to 4:30 p.m.

August 15, Friday–August 16, Saturday—Admission certificates issued to intrants; registration of new students, graduate and undergraduate, from 8:30 a.m. to 4:30 p.m., at California Hall.

August 18, Monday—Registration of old students, graduate and undergraduate, 8:30 a.m. to 5 p.m., at California Hall.

August 19, Tuesday—Instruction in all classes begins at 8:07 a.m.

September 7, Wednesday—Last day for filing applications and programmes in candidacy for doctors' degrees, masters' degrees, and teachers' recommendations to be conferred December, 1919; office of the Dean of the Graduate School, 209 California Hall. All signatures required upon these applications must be secured in advance.

October 29, Wednesday—Last day for filing in final form with the instructors in charge theses for Ph.D. to be conferred December, 1919.

November 26, Wednesday—Last day for filing in final form with the instructors in charge theses for masters' degrees to be conferred December, 1919.

November 27, Thursday–November 29, Saturday—Thanksgiving recess of three days.

November 29, Saturday—Last day for applications for the accrediting of secondary schools for 1919–20.

December 22, Monday–January 10, Saturday—Christmas vacation in the Academic Colleges.

1920

January 7, Monday—Applications for admission in January and applications for cards of admission to the matriculation examinations in January to be filed.

January 7, Monday—Second half-year in the Academic Colleges begins.

January 6, Tuesday–January 10, Saturday—Examinations in the Academic Colleges for the removal of matriculation deficiencies.

January 12, Monday—Registration of students in the Academic Colleges for courses of the second half-year.

January 13, Tuesday—Instruction begins at 8:10 a.m.

January 21, Wednesday—Last day for filing applications and programmes in candidacy for doctors' degrees, masters' degrees, and teachers' recommendations to be conferred May, 1920; office of the Dean of the Graduate School, 209 California Hall. All signatures required upon these applications must be secured in advance.

February 27, Friday—Last day for applications for graduate scholarships for 1920–21.

March 12, Friday—Last day for applications for undergraduate scholarships for 1920–21.

March 23, Tuesday—Charter Day. Exercises in the Greek Theatre or Harmon Gymnasium. Faculty Research Lecture.

March 27, Saturday—Last day for filing in final form with the instructors in charge theses for masters' degrees to be conferred May, 1920.

April 21, Wednesday—Last day for filing in final form with the instructors in charge theses for masters' degrees ot be conferred May, 1920.

April 28, Wednesday—Candidates for Ph.D. file with the Recorder written report of work performed during the year.

May 10, Monday—Class Day.

May 12, Wednesday—The Fifty-seventh Commencement.

May 13, Thursday–August 4, Wednesday—Vacation of 12 weeks in Academic Colleges.

August 5, Thursday–August 10, Tuesday—Matriculation examinations at Berkeley for the Academic Colleges. Filing of applications for admission to advanced and graduate standing and to special status.

August 13, Friday–August 14, Saturday—Admission certificates issued to intrants; registration of new students, graduates and undergraduates, from 8:30 a.m. to 4:30 p.m., at California Hall.

August 16, Monday—Registration of old students, graduate and undergraduate, 8:30 a.m. to 5 p.m., at California Hall.

August 17, Tuesday—Instruction in all classes begins at 8:10 a.m.

UNIVERSITY FARM SCHOOL CALENDAR FOR 1919–20

1919	
Sept. 16–25	Gas Tractor Short Course.
September 26, Friday September 27, Saturday	Entrance examinations and registration of new students.
September 29, Monday	Registration of Juniors and Seniors and Short Course students. 7:30 P.M. Opening session of Short Courses.
September 30, Tuesday	11:00 A.M. Assembly of all students. 1:00 P.M. Class work begins for all students.
September 29, Monday November 7, Friday	(Six weeks' courses) General Agriculture (including Animal Husbandry). Poultry Husbandry. Dairy Manufactures.
November 8, Saturday	First mid-term reports filed.
Two Weeks' Courses:	
November 11–22	Market-Milk Production.
November 11–22	Buttermakers' Course.
December 2–7	Bee Keepers' Course.
December 8–20	Horticulture.
December 9–20	Cheesemakers' Course.
December 9–20	Machine-Milkers' Course.
November 26, Wednesday	12 M. Thanksgiving recess.
December 1, Monday	7:30 A.M. Class work resumed.
December 20, Saturday	Christmas vacation begins at noon. Second mid-term reports filed.
1920	
January 5, Monday	7:30 A.M. Instruction resumed.
January 28, Wednesday	Examinations begin.
January 31, Saturday	Final examinations end at noon.
February 2, Monday	Registration of all students.
February 3, Tuesday	11:10 A.M. Assembly of all students. 1:00 P.M. Classes begin.
February 22, Sunday	Washington's Birthday.
March 6, Saturday	First mid-term reports filed.
April 1, Thursday	Easter recess begins 12 M.
April 7, Wednesday	7:30 A.M. Class work resumed.
April 14, Wednesday	Second mid-term reports filed.
April 22, Saturday	UNIVERSITY FARM PICNIC.
May 24, Monday May 26, Wednesday	Examinations.
May 27, Thursday	8:00 P.M. Commencement.
September 24, Friday September 25, Saturday	Entrance examinations and registration of new students.
September 28, Tuesday	1:00 P.M. Class work begins for all students.

UNIVERSITY FARM SCHOOL

The purpose of University Farm School courses is to increase the earning power of young men in agricultural work by better fitting them for the operation of their own enterprises or for some definite position as trained, skilled employees; to broaden their understanding of the sciences underlying the production of plant and animal products; to familiarize them with the best farm practice and the economic laws of business; and to cultivate a knowledge of those influences which make for good citizenship and American manhood.

The young man without ranch experience and without money, ambitious to own a ranch some day, and desirous of fitting himself to earn a good salary and accumulate experience in the employ of others, must realize that it takes *character, training,* and *time* to arrive, that school or college can give but one—i. e., training.

He must be willing to start as a *beginner* at slightly less than going wage till he proves his ability to work regularly as a *laborer.* This should be done in vacation time so that at the end of his course a position as *helper* may be sought with a good *foreman* or *herdsman*—a man who, while working with his own hands, oversees the work of others—a position which the student should be fitted for in a few months or a year and paid more than a laborer's wage.

The next promotion for the person with the ability to manage men and with growing judgment and experience is that of *superintendent,* a position where the number of men and varied responsibilities take so much head work that manual labor is not expected except in emergencies. The superintendent's job is to get done, to carry out the plans of the manager or owner.

The requirements of a manager are that he shall have the experience, judgment, and ability to organize and plan the entire management, determine breeding lines, and crop rotation, advertise and plan labor and financial policies to secure adequate dividends on the capital invested. When this represents fifty thousand to several hundred thousand dollars it is the rare man with less than five to seven years' experience in addition to college training who will succeed.

The basis of entrance to the Farm School is ability to pursue with profit the assigned course of study and to maintain the prescribed standard of class excellence. Applicants are not admitted below the age of 18 years, unless they are graduates of a high school of recognized standing. Those who are not graduates of a high school are required to pass entrance examinations in English composition and arithmetic. Graduates of an accredited high school, or those who have done any work for which they desire credit, should submit a transcript of their record on a blank form secured from the University Farm, showing the work done and grade attained in each subject. This transcript should be properly signed by the principal.

Application for admission should be accompanied by the necessary credentials. They should be sent to the Dean of the University Farm School so as to reach him, if possible, before September 1. Arrangements for board and room on the farm should also be made in advance. Intrants will not be admitted to full standing until after satisfactory completion of one semester's work.

Evidence of effective vaccination is a condition of entrance.

Evidence of good moral character is required from every applicant.

Substantially all of the instructional work taught the second half-year is a continuation of that taught the first half-year and is dependent on it. Unless students have had instruction which is equivalent to that given the first half-year, it would be better for them to wait and enter at the opening of the school year in September than to enter at the midyear.

EXPENSES

Board may be secured in the school dining hall on the cafeteria plan at an expense of $22 to $27 per month.

Rooms in the dormitories, one in a room, are $6 or $7 per month, and two in a room $4 or $5 per month each. Dormitory rooms contain necessary furniture (but students should provide all linen and blankets). Room rent covers the weekly laundering of linen. In a portion of the rooms bed linen and blankets are furnished at an additional expense of $2 per month. To a limited extent, board and room may be secured in the village of Davis at substantially the same prices.

Books and regular school supplies cost from $15 to $25 per year. *Special clothing,* such as white suits for creamery and dark overalls and jumpers for shop and field work, cost $1–$1.50 each, and may be purchased locally if desired.

Fees.—Tuition is free. A registration fee of $5 per semester to cover incidental expenses is charged each student. This is $15 to non-residents of the state.

A late registration fee of $2 is required of every student who applies for registration at any other time than the date specified in the calendar.

Absence Fee.—A student absent from an exercise immediately before or following a holiday or recess will be required to present a Business Office receipt for $2 absence fee as a condition of readmission to class.

A fee of 5 cents per day for late payment of room rent after the 10th of the month is required of each student.

Breakage deposits: A $5 deposit is required of each student. After deducting breakage and loss in laboratories, the remainder will be refunded at the end of the semester.

The expenses necessary for an eight-month year vary from $255 to $323, as indicated by the following table:

Board, cafeteria, per month $22 to $27, average $24, per year	$192
Room rent, one in room, per month $6 to $7, per year	56
Room rent, two in room, each per month $4 to $5	
Books and other supplies, per year $15 to	25
Military uniform, $10 to	12
Registration fee, for residents of state, per year	10
Membership in Associated Student Body, per year	5
Necessary expense for residents of state	$255 to $303
Registration fee for non-residents of state additional, per year	20
Necessary expense for non-residents of state, per year	$275 to $323

Opportunities for earning part of one's expenses by labor about the farm and school are much less than the demand for such work. Students who are good workers do sometimes earn from one-fourth to one-half of the necessary expense. Students should not enter without having available at least half or two-thirds of the necessary funds for the year's expenses.

It takes half a man's time to earn a living.

The young man capable of doing a laborer's work in town or on a ranch, or a clerk's work in the store, at $65 to $75 per month, should be able to save enough in ten months to put him through a year or more of school.

UNIVERSITY FARM SCHOOL COURSES OF STUDY

The courses of study offered and their arrangement is planned to give the student something usable and at the same time develop his ability to see and think and do, and to give him a broader knowledge of the opportunities in the business of ranching and greater appreciation of his responsibilities as a citizen.

Each semester he may take one major subject. Thus the graduate should be familiar with at least two major lines of work together with various supplemental subjects which increase efficiency and prepare for the unexpected.

Most men are not doing at 30 years of age what they expected at 20 they would be doing—therefore, lay as broad a foundation as possible.

The wonderful results in improved health from regular exercise, manifested in young men called to national service in Army and Student Army Training Corps prompt the continuance of drill as a condition of attendance at the University Farm School unless physically disqualified. Textbook work in the school of the soldier and company is required the first year.

A plain uniform of khaki shirt, breeches, leggings and hat is required.

In so far as students are qualified and facilities are available, students are advised to engage in a business project.

A project is a business enterprise in which a student buys one or more animals, feeds and cares for them or rents ground and raises a crop, making a detailed report of his work and a financial statement of costs and profits, and the labor income he receives, etc. The essential features are that the student shall make some cash outlay—shall have something to lose or win, shall do the routine work, shall have the responsibility for the success or failure, shall submit a record of the enterprise, and shall have the advice and guidance of instructors.

Credit for work is estimated in terms of units. The unit represents the accomplishment expected of the average student in one hour of classroom work and one hour of preparation therefor per week, or two hours of laboratory work per week, for 16 weeks—that is, one unit represents the result of 32 hours of student effort. The normal schedule is 20–22 units exclusive of Drill, Music or Farm Practice.

Subjects preceded by (*) required for graduation.

The usual periods for each subject are: Two lectures one hour each and one four-hour laboratory or practice period per week.

EXAMINATION "A"

Before graduation every student is expected to show a reasonable ability to harness and drive a double team and single horse, to take apart and reassemble double and single harness, to handle a pitchfork, shovel, axe, and Jackson fork, to handle a walking plow and a Fresno scraper, to milk and to do other common manual work about a farm.

It is well to pass this examination as early in the course as arrangements can be made at the Dean's Office.

REQUIREMENTS FOR GRADUATION

Requirements for graduation are the completion of three years' work of 120 credits in approved subjects, the passing of Examination "A," and presence at Commencement Exercises.

OUTLINE OF COURSE

In the following outline the abbreviations refer to the courses described beginning on page 66, as A. E. 01, 2, equals Agricultural Engineering 01, Agricultural Drawing—credit 2 units.

The student should take, each semester, the required work of that semester unless he already has credit for it and, in addition, such elective work as schedule permits. Since it is not possible to arrange a schedule of all subjects so that each student may take just what he wants each term, the student will find least conflict and secure the most complete course by adhering to the following sequence of courses as nearly as his entrance preparation permits:

	FRESHMAN				JUNIOR				SENIOR			
	1st Semester		2nd Semester		1st Semester		2nd Semester		1st Semester		2nd Semester	
Required for Graduation	A. E. 01	2			A. E. 03	2	A. E. 04	2	A. E. 05	4		
	Chem. 01	4	Chem. 02	4	Bot. 01	4	Bot. 02	4				
	E. E. 01	4	E. E. 02	4	Soils 01	4	Agr. 02	4	Agr. 03	4	E. E. 05	4
	Hyg. 01	1	Hyg. 02	1							Ent. 01	4
	Math. 01	4	Math. 02	4	Math. 03	4			Math. 05	4	Irri. 02	4
	M. S. 01	1	M. S. 01	1								
Major Subject Choice of One Each Semester	A. H. 015	8	A. H. 026	8	D. I. 017	8	D. I. 024	8	Hort. 013	8	Hort. 022	8
	D. I. 017	8	D. I. 024	8	A. H. 015	8	A. H. 026	8	P. H. 013	8	P. H. 024	8
	Hort. 013	8	Hort. 02 Oler. 02	4 4	P. H. 013	8	P. H. 024		D. I. 017	8	D. I. 024	8
	P. H. 013	8	P. H. 024	8	Hort. 013	8	Hort 022	8	A. H. 015	8	A. H. 026	8
Elective									A. H. 09	4	A. H. 010	4
									Cit. 02	4		
									D. I. 08	4		
	F. P. 01	2	F. P. 02	2					Ent. 01	4	A. E. 06	2
	A. H. 07	4							En. 03	4	Bot. 04	4
	Milk Prod.				D. I. 03	4	A. E. 08 } D. I. 06 }	4			Ent. 04	4
					F. P. 01	2	F. P. 01	2				
					Hort. 05	4	Hort. 08	4			Math. 06	3
							Math. 04	4				
					Oler. 03	4			Vet. Sci. 01	4		
					Vit. 01	4	Oler. 04	4				
							Vit. 02	4				
					Project	4	Project	4	Project	4	Project	4

DESCRIPTION OF COURSES OF STUDY

AGRONOMY

Professor GILMORE, Associate Professor KENNEDY, Associate Professor R. L. ADAMS, Assistant Professor HENDRY, Assistant Professor MADSEN, Mr. WILKINSON.

Agr. 02. **Field Crops.** Second semester.

Three lectures; one laboratory.

Prerequisite: So. 01. Prerequisite or accompanying: Bot. 02 or 04. Prerequisite to Agr. 03. Required for graduation.

Improved methods of culture for the production of field crops, with laboratory practice in the classification and identification of varieties; seed selection, seed testing, seed treating, crop judging, and the commercial grading of grains under the official grain standards of the United States.

Agr. 03. **Farm Management.** First semester.

Two lectures; two discussion laboratories.

Prerequisite: So. 01 and Agr. 02, and senior standing. Required for graduation.

A study of the business principles of farming; the organization and conduct of a farm; the planning of cropping systems; the handling of capital, labor, stock, and machinery.

AGRICULTURAL ENGINEERING

Professor Davidson, Assistant Professor Fletcher, Mr. Belton, Mr. Ingrim

†A. E. 01. **Agricultural Drawing.** First semester. 2 units.

One 4-hour laboratory.

Prerequisite to, or accompanying, A. E. 03. Required for graduation.

Lettering, graphic method, practice in drawing working plans and detail of construction of farm buildings.

†A. E. 03. **Building Construction.** First semester. 2 units.

One 4-hour laboratory.

Prerequisite or accompanying: A. E. 01. Prerequisite to A. E. 02. Required for graduation.

Use of tools; carpentry; practice in building foundations, cutting rafters, framing; erection of small buildings; concrete work.

†A. E. 04. **Forging.** Second semester. 2 units.

One 4-hour laboratory.

Prerequisite to A. E. 05. Required for graduation.

Forging, welding, and tempering; repair of farm machinery; sharpening plowshares, harrow teeth, etc.; tire and axle setting; making hooks, clevises, bolts, etc.

A. E. 02. **Farm Structures.** Second semester. 2 units.

One 4-hour laboratory.

Prerequisite: A. E. 03.

Planning of farm buildings; construction, convenience, lighting, ventilation, sanitation, and cost; materials, plans, and specifications.

†A. E. 05. **Farm Machinery.** First semester. 4 units.

Two lectures; one laboratory.

Prerequisite: A. E. 04, Math. 03, and senior standing. Required for graduation.

Principles underlying the construction, adjustment, operation, and repair of tillage, seeding, haying, harvesting, and threshing machinery; farm tractors, practice in setting up, operating, adjustind, and testing; babbiting, shaft erecting, belt splicing, and other similar exercises; expense of operation.

A. E. 06. **Farm Machinery (continued).** Second semester. 2 units.

One lecture; one laboratory.

Prerequisite: A. E. 05.

The production and utilization of power for agricultural purposes; the horse as a motor; the gas engine and the electric motor; the tractor. This course also includes a study of power pumps. Practice in the adjusting, operation, repair, and testing of motors and pumps.

A. E. 08. **Dairy Mechanics.** Second semester. 2 units.

Two laboratories with lectures.

Conducted in co-operation with Division of Dairy Industry.

To be taken by students specializing in Dairy Industry in place of A. E. 05.

Lectures on management and repair of steam boilers and gas engines, electric motors, pumps, refrigerating machinery, creamery machinery, also construction of cold storage rooms; practice work in soldering, babbiting, pipe fitting, erection of shafting, flue fitting and testing, and actual operation of creamery power plant.

ANIMAL HUSBANDRY

Professors True, Assistant Professors Thompson and Voorhies

A. H. 015. **Beef Cattle, Horses, and Sheep.** First semester. 8 units.
Four lectures; two 4-hour laboratories.
Prerequisite to Vit. S. 01.
This course deals with the judging of market classes of beef cattle, sheep and horses, and with the fundamental principles of feeding and management of all classes of livestock.

A. H. 026. **Hogs and Dairy Cattle.** Second semester. 8 units.
Four lectures; two 4-hour laboratories.
This course deals with the judging of market hogs and dairy cattle and their feeding and management.

A. H. 07. **Milk Production.** First semester. 4 units.
To be taken in conjunction with D. I. 01 (Elements of Dairying). For description of D. I. 01 see page 72.
Two lectures; one 4-hour laboratory.
This course takes up the judging, feeding, care, and management of dairy cattle. Designed for students specializing in Dairy Industry.

A. H. 09. **Elementary Principles of Breeding.** First semester. 4 units.
Three lectures; one 2-hour laboratory.
Prerequisite: A. H. 015 and A. H. 026.
This course consists of lectures and recitations on the fundamentals of livestock breeding, including a study of heredity, variation, selection, systems of breeding, and pedigrees.

A. H. 010. **Breeds and Types.** Second semester. 4 units.
Two lectures; two 2-hour laboratories.
Prerequisites: A. H. 015 and A. H. 026.
Judging of representatives of the breeds of beef cattle, dairy cattle, hogs, sheep, and horses. A study of their origin, history, characteristics, and adaptability to various conditions.

A. H. 012. **Project.** 4 units.
Hours and character by arrangement (limited to division facilities).
Prerequisite: A. H. 015.
The student may buy, feed, and care for a brood sow, fattening pigs, milch cow, calves, sheep, steers, or goats. The student must conduct all correspondence and negotiations, do all work, keep accurate records of feed consumption, gain in weight or milk produce, etc., determine cost of grain, the labor, income, and return on investment.

BOTANY

Mr. Pope

†Bot. 01. **Plant Life.** First semester. 4 units.

Two lectures; two laboratories.

Prerequisite to Bot. 02. Required for graduation.

Lectures, experiments, and exercises showing the formation, structure, and necessary conditions for the growth of plants; seed germination tests; collection and identification of weed seeds, and methods of controlling weeds.

†Bot. 02. **Economic Botany.** Second semester. 4 units.

Two lectures; two laboratories.

Prerequisite: Bot. 01. Required for graduation.

Fungus diseases and identification of economic plants and weeds. Each student is expected to develop a garden plot illustrating the botanical relationship of several groups of plants and methods of plant growth.

Bot. 04. **Farm Botany.** Second semester. 4 units.

Two lectures; two laboratories.

Required of all students receiving credit for high school botany.

Note.—Bot. 02 or Bot. 04 must either precede or accompany Agr. 02 (Field Crops).

Bot. 05. **Project.** Either semester. 4 units.

The student may rent on shares a small area of land for the raising of ornamental plants, etc.

The student must make some cash investment, do all the work, find market for product, prepare financial statement of expense and income.

CHEMISTRY

Mr. Norton

Chem. 01. **Elements of Chemistry.** First. Semester. 4 units.

Two lectures; one laboratory.

Prerequisite to Chem 02. Required for graduation.

Principles of chemistry with a study of the chemistry of gases, oxygen, hydrogen, and water in their relations to fumigation; disinfecting; agricultural solutions; explosives; heat values of fuels, foods, and feeding stuffs; domestic and irrigation water.

Chem. 02. **Elements of Chemistry.** Second semester. 4 units.

Two lectures; one laboratory.

Prerequisite: Chem. 01. Required for graduation.

Continuation of Chem. 01. Lectures and experiments with soils, soil-forming minerals, fertilizers, sprays, and food products.

CITRICULTURE

Professor Coit, Assistant Professor Condit

Citr. 02. **Citrus and Semi-tropical Fruits.** Second semester. 4 units.

Two lectures; one 4-hour laboratory.

Prerequisite: Bot. 01 and 02, and Hort. 013.

Senior standing required.

This course covers in detail the history, propagation, culture, and handling of citrus fruits, figs, and olives, with practical work in planting seeds and seedlings, budding nursery stock, balling trees, operating orchard heaters, judging varieties, making fig and olive cuttings, and top-working trees. Considerable time is spent in the study of semi-tropical fruits such as the avocado, loquat, persimmon and Feijoa.

DAIRY INDUSTRY

Professor Roadhouse, Assistant Professor Baird
Mr. Denning and Mr. Marquardt

D. I. 01. **Elements of Dairying.** First semester. 4 units.

To be taken in conjunction with A. H. 07 (Milk Production). For description of A. H. 07 see page 70.

Two lectures; one 4-hour laboratory.

A general study of the secretion, composition, properties, care, and handling of milk; principles and application of the Babcock test and acidity tests; construction and operation of cream separators; ripening and churning of cream under farm conditions; instruction and practice in cheese making as adapted to farm conditions.

D. I. 024. **The Manufacture of Dairy Products.** Second semester. 8 units.

Four lectures; two 4-hour laboratories.

Prerequisite: D. I. 017. Prerequisite to D. I. 05.

A study of the commercial tests for butter fat, acidity, moisture, salt, and adulteration of dairy products; principles and practice of creamery butter making; pasteurization, ripening and churning of cream; propagation of starters; use of power separators; scoring of dairy products; study and practice in making various types of cheese; instruction and practice in the making of plain and fancy ice cream, ices, and sherbets, and in the pasteurization, cooling, standardization, and distribution of market milk and cream.

D. I. 05. **Creamery Management.** Second semester. 4 units.

Two lectures; one 4-hour laboratory.

Prerequisite: D. I. 024.

Practice in keeping records of the manufacture of products in the University Farm Creamery; detecting losses, checking up process of manufacture of ice cream, cheese, and market milk; creamery bookkeeping and technical calculation are included.

D. I. 07. **Dairy Mechanics.** First semester. 4 units.
(See A. E. 08.)

D. I. 08. **Practice in Manufacturing Dairy Products.**

Hours and credit to be arranged.

Prerequisite: D. I. 024, or they may be taken simultaneously.

The practice in this course includes regular work in the University Farm Creamery. The student may choose the department in which he desires to gain experience. This course is recommended to all students majoring in Dairy Industry.

ENGLISH AND ECONOMICS

Mr. Kelley

†E. and E. 01. **Agricultural Literature.** First semester. 4 units.

Four lecture periods.

Required for graduation.

Introduction to technical literature, with emphasis on accuracy of understanding; practice in taking lecture notes, in summarizing agricultural publications, and in preparing reports; increasing familiarity with technical terms; debating on agricultural and current topics.

†E. and E. 02. **Business English.** Second semester. 4 units.

Four lecture periods.

Required for graduation.

Training in business correspondence, with emphasis on form, usage, spelling, punctuation, and choice of words; practice in oral and written presentation of student's own thought.

E. and E. 03. **English Practice.** First semester.

Hours and units by arrangement.

Elective, but may be required of candidates for graduation whose written work in technical courses is poor.

†E. and E. 05. **Rural Economics.** First semester. 4 units.

Four lectures, with discussions and debates.

Required for graduation.

Elements of economics; the farmer's business problems in relation to land, markets, banking, and credits; rural social problems and the fundamentals of good citizenship.

E. and E. 05a. **Rural Economics.** Second semester. 4 units.

Repetition of E. and E. 05 for benefit of students unable to take it in the first semester.

ENTOMOLOGY

Professor WOODWORTH, Mr. DEONG, Mr. COLEMAN

†Ent. 01. **Insect Pests.** First semester. 4 units.

Two lectures; two laboratories.

Required for graduation.

The structure, classification, and life history of insect pests commonly attacking orchard and field crops and farm animals, and the remedies available for their control.

Ent. 01A. **Insect Pests.** Second semester. 4 units.

Repetition of Ent. 01 for benefit of students unable to take it in the first semester.

Ent. 02. **Bee Keeping.** First and second semester. 4 units.

One lecture; one laboratory.

Elective.

Practice in the handling of bees and a study of the apparatus used in modern bee keeping.

‡Ent. 03. **Animal Parasites.** First semester. 4 units.

Two lectures; two laboratories.

Prerequisite: Ent. 01.

A study of the life history, habits, and classification of insect pests and internal parasites affecting man and livestock.

Laboratory and field practice.

‡Ent. 04. **Plant Insects.** Second semester. 4 units.

Two lectures; two laboratories.

Prerequisite: Ent. 01.

Life history, habits, and classification of insects affecting the orchard, garden, and field crops; control measures.

Field practice.

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† Subjects preceded by a dagger (†) required for graduation.

‡ Ent. 03 and 04 will not be taught in 1919–20.

FARM PRACTICE

Assistant Professor TAVERNETTI

F. P. 01. **Farm Practice.** First semester. 2 or 4 units.

One or two 4-hour periods of farm work.

Regular instruction in such common farm operations as may be in season at the time, with particular reference to developing skill in the use of a pitchfork, shovel, axe, Jackson fork, the taking apart and reassembling of harness, harnessing and driving of single horse and double team; practice in use of walking plow, Fresno scraper, and such other operations as the work in progress permits, including building fences and repair work.

F. P. 02. **Farm Practice.** Second semester. 2 or 4 units.

(Same as F. P. 01.)

HORTICULTURE

Professor Whitten, Professor Howard, Assistant Professors Hendrickson, Tufts, and Overholser, Mr. Philip, Mr. Sweet and Mr. Wood

Hort. 013. **General Horticulture.** First semester. 8 units.

Two lectures; three 4-hour laboratories.

Plant propagation, including lectures and practice work in budding, grafting, and layering; the making of cuttings; stratification and planting of tree seeds; nursery management; and pruning of deciduous orchard trees.

Hort. 02. **Fruit Production.** Second semester. 4 units.

Two 4-hour laboratories. Second half devoted to Oler. 02.

Field practice in planting, spraying, and pruning.

Principles of deciduous fruit growing, exercises in laying out and planting of orchards; also studies of sites and soils, cultivation, irrigation, pollination, and thinning. As rapidly as possible all work will be laid out for each man to do and when completed he is done.

Hort. 05. **Orchard Problems.** First semester. 4 units.

Two 4-hour laboratories.

Prerequisite: Hort. 013 and 022, and consent of instructor.

An elective course designed to train advanced students in diagnosing orchard troubles and prescribing remedial measures.

A small group of men (not more than six or seven) will be taken to various orchards where trees are not doing well and a study made of the situation. Written reports based on field work and laboratory and library studies will be required covering each problem.

Hort. 08. **Pruning Studies.** Second semester. 4 units.

Two 4-hour laboratories.

Prerequisite: Hort 013 and 022, and consent of instructor.

Designed to meet the needs of men who may wish to make a special study of the pruning of one or more particular fruits. Orchards will be visited in the Sacramento Valley, Vaca Valley, and Sierra foothills. Class limited to seven students.

HYGIENE

Dr. Bates

†Hyg. 01. **Rural and Personal Hygiene.** First semester. 1 unit.

One lecture.

Prerequisite to Hyg. 02. Required for graduation.

Lectures on personal hygiene, including the importance of ventilation and exercise; human anatomy and physiology; rural hygiene; sexual hygiene; control of insect carriers of disease.

†Hyg. 02. **First Aid.** Second semester. 1 unit.

One lecture.

Prerequisite: Hyg. 01. Required for graduation.

A course in the recognition and emergency treatment of common accidents. Students completing this course will, if desired, be recommended to the American Red Cross for First Aid Certificate. (Fee for certificate, 50 cents, which must accompany recommendation.)

IRRIGATION

Professor Frank Adams and Associate Professor Beckett

†Irrig. 02. **Irrigation Practice.** Second semester. 5 units.

Two lectures; one 4-hour laboratory.

Prerequisites: Math. 05 and So. 01.

Preparation of land for irrigation; water requirements of field crops and orchards and application of water; design and construction of farm laterals, delivery gates, reservoirs, concrete pipe lines, pumping units, etc.; methods and devices for measurement of water; simple problems of drainage.

Irrig. 04. **Summer Practice.** 3 units.

Prerequisite: Irrig. 02.

A three weeks' field course in the irrigation of field crops, alfalfa, and orchards. Various irrigated sections will be visited where the student will be required to handle irrigation water under the direction of the instructor, measure water where practicable and make such observations as will thoroughly acquaint him with the best field practice.

A written report covering the work will be required before credit is given.

LIBRARY PRACTICE

Miss Brown

L. P. 01. **Library Practice.** Either semester. 1 unit.

One lecture; two hours' practice work.

Required of first-year students.

Training in the use of the card catalogue, library indexes, reference books, periodicals, and documents. Special work on how to know what material is being published, and how to obtain it. The practice work consists of the use of library equipment.

MATHEMATICS

Mr. Titus

†Math. 01. **Farm Arithmetic.** First semester. 4 units.

Four lectures.

Prerequisite to all following mathematics courses. Required for graduation.

Application of arithmetic through fractions and percentage to the estimating of building materials, averages, creamery problems, and to the mixing of rations, fertilizers, etc.

†Math. 02. **Algebra.** Second semester. 4 units.

Four lectures.

Prerequisite: Math. 01. Prerequisite to all following mathematics courses. Required for graduation.

Fundamental principles and formulas and solution of simple equations, with illustrative applications.

†Math. 03. **Geometry.** First semester. 4 units.

Four lectures.

Prerequisite: Math. 02. Prerequisite to all following mathematics courses and to A. E. 05 and Irrig. 02. Required for graduation.

The fundamental propositions of geometry with simple applications.

Math. 04. **Physics and Computation.** Second semester. 4 units.

Four lectures.

Prerequisite: Math. 03. Prerequisite to A. E. 06 and Math. 06.

Principles of ''simple machines''; flow of water in pipes and ditches; work and power problems; principles of the dynamo and motor; land areas; capacities of tanks, reservoirs, silos, etc.

†Math. 05. **Surveying.** First semester. 4 units.

Two lectures; one 4-hour laboratory.

Prerequisite: Math. 03. Prerequisite to Irrig. 02. Required for graduation.

Study of the principles of surveying, especially chain surveying; profile leveling and contour mapping.

Math. 06. **Advanced Surveying and Trigonometry.**
Second semester. 3 units.

One lecture; one 4-hour laboratory.*

Prerequisite: Math. 05.

Transit work, cross-sectioning; stadia topogoraphy, etc.

MILITARY SCIENCE

Professor ....

M. S. 01. **School of the Soldier.** First semester. 1 unit.

One lecture.

Required of all first-year men.

This course deals with the drill regulations of the soldier, squad, and company.

M. S. 02. **School of the Soldier.** Second semester. 1 unit.

One lecture.

Required of all first-year students.

Continuation of M. S. 01 with particular reference to physical development.

MUSIC†

Mu. 01. **Orchestra.** First semester. 1 unit.

One practice and participation in public performance.

Admission subject to tryouts and approval of leader.

A study of orchestral music designed to give the student ensemble practice and to improve his score reading, time, and expression. A special effort will be made to bring about a better appreciation of high-class music. Several concerts will be given during the year, as well as opportunity to play at other entertainments.

Mu. 02. **Orchestra.** Second semester. 1 unit.

Continuation of Mu. 01.

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* May be scheduled 2 lectures for first half semester. Students having High School trigonometry excused from this part and allowed only 2 units credit.

† May not be offered in 1919–20.

Mu. 03. **Chorus Singing.** First semester. 1 unit.

One practice and participation in public performance.

Instruction and practice in singing choral music, correct enunciation, breathing, and use of the voice. Large and small choruses and quartettes will be organized and trained. Encouragement of the spirit of music in the community will be a feature of the work.

Mu. 04. **Chorus Singing.** Second semester. 1 unit.

Continuation of Mu. 03.

Mu. 05. **Chorus Leading.** First semester. 1 unit.

One lecture and assigned practices.

Prerequisite: Mu. 03 or 04.

Instruction in the theory and art of organizing and leading choruses, choirs, congregational and communal singing, selecting and grouping of voices, choice of music, and arrangement of programmes.

Mu. 06. **Chorus Leading.** Second Semester. 1 unit.

Continuation of Mu. 05.

OLERICULTURE

Associate Professor Rogers

Oler. 02. **Vegetable Gardening.** Second semester. 4 units.

Two lectures; two laboratories.

Prerequisite: Junior standing required.

Principles of vegetable gardening and methods of fertilizing, planting, cultivating, irrigating, and handling the common vegetables for home use or market, and their adaptation to intercropping in young orchards.

Oler. 03. **Special Crops.** First semester. 4 units.

Two lectures; one laboratory.

Prerequisite: Oler. 02.

Advanced work with special crops and problems.

Oler. 05. **Project.** 4 units.

Hours and crops by arrangement.

Prerequisite: Oler. 02.

A limited number of students may rent land on share rent for the growing of vegetables or vegetable seeds. They will do the work, keep record of labor, teams, tools, irrigation, note attacks of pests, etc. The proceeds will be their own less the rental share and costs.

POULTRY HUSBANDRY

Associate Professor DOUGHERTY and Assistant Professor LLOYD

P. H. 013. **Breeds and Breeding.** First semester. 8 units.

Two lectures; two laboratories; pen practice 3 times a day including Sunday for 8 weeks.

Prerequisite: Math. 02, Eng. 02. A. E. 01 must precede or accompany P. H. 013.

A study of the more popular breeds and varieties, their distinctive characteristics, and utility qualities; the selection and laying out of a poultry farm, killing, picking, and dressing fowls for market; the laws of breeding and their application to the building up of flocks of heavy layers or choice meat fowls; caring for pens of mature fowls.

P. H. 024. **Feeding and Management.** Second Semester. 8 units.

Two lectures; two laboratories; incubation or brooding practice 3 times a day including Sunday for 12 weeks.

Prerequisite: P. H. 013*. Prerequisite or accompanying: Chem. 02.

This course deals with natural and artificial incubation and brooding, selecting, grading, and studying the structure of eggs; feeding for egg and meat production; poultry house construction, the making of poultry appliances, anatomy, and physiology; caponizing; disease, parasites, and sanitation, marketing; the general care and management of a poultry farm.

P. H. 05. **Project.** Either semester. 2 to 4 units.

Hours by arrangement.

Prerequisite: None.

The student may buy eggs and hatch them in an incubator, buy and raise day-old chicks, buy eggs and hatch and raise the chick, or buy and manage a pen of laying hens. The student must do all the work, assume full responsibility for its success, conduct all business transactions and keep accurate records of production, operation expense, and income.

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* P. H. 013 may be waived in specific instances as a prerequisite to P. H. 024 at the discretion of the Poultry Division in the case of a student first entering school at the beginning of the second semester.

SOILS

Professor Shaw, Assistant Professor Smith

†So. 01. **Soils.** First semester. 4 units.

Two lectures; one 4-hour laboratory.

Prerequisite: Chem. 01 and 02. Prerequisite to Agr. 02. Required for graduation.

This course treats of the origin and formation of soils; their relation to heat, moisture, and air; plant food constituents and alkali; the effect of drainage, irrigation, mulches, fertilizers, crop rotations, and the renovating of worn-out soils.

VETERINARY SCIENCE

Dr. Haring, Dr. Hayes

V. S. 01. **Veterinary Science.** First semester. 4 units.

Two lectures; two laboratories.

Prerequisites: A. H. 015 and 026. Senior standing.

This course gives the essentials of veterinary medicine and surgery necessary for first aid treatment of diseases of farm animals, together with the fundamentals of anatomy and physiology sufficient to give the student an understanding of the animal body in relation to the breeding and feeding of profitable livestock.

VITICULTURE

Professor Bioletti, Assistant Professor Flossfeder

Vit. 01. **Vineyard Organization.** First semester. 4 units.

Two lectures; one laboratory.

Raisin making; classification and structure of the vine; pruning and training of vines; location, laying out, and planting of vineyards; visits to leading vineyards.

Vit. 02. **Vineyard Practice.** Second semester. 4 units.

Two lectures; one laboratory.

Prerequisite: Vit. 01.

Propagation of vines, bench grafting, callusing, nursery work; resistant vines, diseases of the vine and methods of control; insect pests and methods of control; making grape juice and vinegar; trips in the field.

The

COLLEGE OF AGRICULTURE

through its Extension Division is striving to meet the demands of the people of California for the best scientific and practical information along agricultural lines. This is placed before the public by means of such agencies as:

COUNTY FARM ADVISORS
EXTENSION SCHOOLS
CORRESPONDENCE
PERSONAL INTERVIEWS
HOME DEMONSTRATION AGENTS
BOYS' AGRICULTURAL CLUBS
FARMERS' INSTITUTES

ANYONE DESIRING INFORMATION REGARDING ANY OF THESE SHOULD ADDRESS:

AGRICULTURAL EXTENSION DIVISION
COLLEGE OF AGRICULTURE
BERKELEY, CALIFORNIA

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UNIVERSITY OF CALIFORNIA BULLETIN

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- The Circular of Information, Academic Departments.
- The Annual Announcement of the Summer Session.
- The Annual Announcements of the Medical School, the Colleges of Dentistry, Law, and Pharmacy.
- The President's Annual Report.
- The Prospectus of the College of Agriculture.